

MILITARY COPY REVIEW



U. S. ARMY COMMAND AND GENERAL STAFF COLLEGE
FORT LEAVENWORTH, KANSAS

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POLICY.

Unless otherwise indicated, the views expressed in the original articles in this magazine are those of the individual authors and not those of the Department of the Army or the U. S. Army Command and General Staff College.

Editor.

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This copy is not for sale. It is intended for more than one reader.
PLEASE READ IT AND PASS IT ALONG

THE U. S. ARMY COMMAND AND GENERAL STAFF COLLEGE DEDICATES BELL HALL

Secretary of the Army Wilber M. Brucker

J. Franklin Bell Hall, the new academic building of the U. S. Army Command and General Staff College, was dedicated on 14 January 1959. The MILITARY REVIEW presents a coverage of the ceremonies in the following pages beginning with the dedicatory address by The Honorable Wilber M. Brucker, Secretary of the Army, followed by the opening remarks of Major General Lionel C. McGarr, Commandant of the College, who introduced Mr. Brucker, and concluding with a pictorial treatment of the development of the College and Bell Hall.—Editor.

THE dedication of this splendid new academic building designed to further the mission of the United States Army Command and General Staff College is an event of great significance. It marks a noteworthy forward stride in the development of military education fully measuring up to the tremendous responsibilities resting upon the United States Army as a major bulwark of our country in these critical years of peril. The entire Army and the Nation at large will be the beneficiaries of this building named in honor of Major General J. Franklin Bell, "father of the modern Army school system."

For years it was a matter of deep concern within the Army that its senior tactical school should lack adequate college

facilities, and must carry out its vital educational program in a converted riding hall and stables. Efforts to remedy the situation dated back far into World War II, but actual construction of proper facilities did not get under way until 5 November 1956, shortly after the College celebrated its 75th anniversary. For those who labored so long and so well with antiquated tools, it must be gratifying indeed to see their hopes brought to fruition in a modern structure consistent with the great traditions of Leavenworth.

Bell Hall, with its twenty-four 50-man classrooms, auditorium, faculty briefing room, conference rooms, library, archives, and staff and faculty offices, will permit the consolidation of all resident instructional facilities under one roof. It will contribute immeasurably to the ability of Leavenworth to meet the stirring challenge of the future.

The impact of technological advances, the rapid changes in organizational and operational concepts, and the worldwide multiplication of Army commitments for joint and combined staff and operational personnel are factors which necessitate the creation of as broad as possible a base of highly trained career officers.

As our senior commanders in this country and overseas have found their tasks becoming ever more complex and exacting, they have placed increasing emphasis upon Leavenworth training as a principal prerequisite in the selection of their staff offi-

The dynamic response being made by this forward-thinking, forward-moving College to the challenge of the future is in consonance with trends throughout our Army today and in keeping with the pressing requirements of the nuclear age and modern technological advances

cers. It has become imperative to increase attendance at this College without in any way sacrificing quality for quantity. This can now be done. Completion of this new building, and concurrent enlargement of the staff and faculty, will make it possible in the years to come for a far greater proportion of our officers to attain the stature which the Command and General Staff College confers upon its graduates. Increases in both the Regular and Associate Courses will become effective for classes starting in September of this year.

Forward Look

Through the years, the Command and General Staff College has achieved an enviable standing within the United States Army School System, and among military training establishments around the world. However, there is no thought here of resting upon the hard-won laurels of the past. Leavenworth, like the entire Army, is constantly on the march toward new heights of accomplishment. I sense the stirring of a dynamic new spirit, a new perception of

Mr. Wilber M. Brucker was graduated from the University of Michigan in 1916 with an LL. B. degree. He enlisted in the Michigan National Guard in 1915 and saw service on the Mexican Border with the 33d Infantry of the Michigan National Guard in 1916 and 1917. Following the entry of the United States into World War I, he attended the First Officers' Training Camp at Fort Sheridan, Illinois, and was commissioned a second lieutenant of infantry. He served in France with the 42d (Rainbow) Division as a lieutenant in all of its engagements, including Chateau-Thierry, St. Mihiel, and the Meuse-Argonne. Cited by General Headquarters, American Expeditionary Forces, for bravery under fire, he was awarded the Silver Star. He was discharged from the Army as a first lieutenant in June 1919. In November 1930 Mr. Brucker was elected Governor of Michigan and served as chief executive until 1933. He was appointed General Counsel of the Department of Defense in April 1954, and was sworn into office as Secretary of the Army on 21 July 1955.

urgency, of which this fine academic building is a material symbol.

The dedicated staff and faculty of the College work with unremitting zeal to adapt its program to the impact upon the Army of new weapons systems and similar developments, the reorganization of the Army in accordance with the pentomic concept, and the necessity for constant reorientation of instruction to support, under fluid conditions, the Army's functions in any kind of war—general or limited, atomic or nonatomic—as an indispensable member of our great land, sea, and air defense team.

In line with the events of recent years and the expectations for tomorrow, the curriculum was entirely rewritten for the 1957-58 academic year. In support of this revision, a major reorganization of departments along functional lines has been completed. Significant changes have been made in educational philosophy and academic methods. The College has demonstrated a keen awareness of the necessity for establishing a proper balance between the intensive training in techniques, tactics, and procedures which characterized the short courses during World War II, and the marked subsequent trend toward major emphasis upon fundamental principles as applied in the solution of problems.

Instruction is designed to prepare students for their role as military problem solvers by teaching them to think, rather than merely to memorize facts and formulas. In this fashion the College equips officers to cope with the drastic reduction in battlefield reaction and decision time resulting from the new tactics of nuclear warfare. Today's tactical doctrine imposes more responsibility upon junior commanders than was borne by many senior commanders of World War II. Decisions which in the past might have waited upon a staff conference, in any future war will have to be made within minutes, and on the spot.

The Vital Factor

In its courses of instruction, this College properly gives primacy to the philosophy that we must never allow ourselves to be so preoccupied by our array of new tools of war—missiles, vehicles, electronic marvels, and all the rest science has placed in our hands—that we forget the overriding importance of men—of human mastery over material things. It would be tragic if we allowed the pressures of technology to derogate the qualities of mind and spirit which are fundamental to our national strength.

In recognition of this, the College proceeds on the conviction that the Army, if it is to fulfill its responsibilities to the Nation, must revitalize and reemphasize time-honored moral principles and standards—particularly through the personal example of those in authority at all levels of command.

The dynamic response being made by this forward-thinking, forward-moving College to the challenge of the future is in consonance with trends throughout our Army today. Modern technology demands that we continue to raise human standards all along the line—and we have started at the foundation by developing a program designed to obtain and retain high caliber men—men with a sense of responsibility who are capable of handling complicated matériel as well as complex problems. The Army's new Enlisted Management Program contributes to this end through appropriate financial reward, prestige, and inspiring opportunities for advancement. This program was made possible to a large degree by legislation recently passed by the Congress, notably legislation which authorized the President to modify standards of induction.

By means of preinduction screening, we have been enabled to reject individuals at the outset who do not demonstrate a suitable capability for modern military training. This has resulted in a significant saving of time which would have been

fruitlessly expended in attempting to train these individuals, and of the costs involved in their eventual elimination from the service. Last year, prior to the implementation of this authority, we discharged 72,000 ineffective men with resultant improvement in the level of training, job performance, behavior, and elementary education participation. Of these, 34,000 were separated prior to the completion of their basic training.

Recent Changes

Concurrently, we moved to put into effect the provisions of the military pay legislation passed last May. The first proficiency payments were made in November to soldiers selected by their commanders as being most proficient in critical skills. Beginning this month, our soldiers begin competing for proficiency payments against Army-wide standards established by our new Enlisted Evaluation System which allows us to measure the capabilities of our men by a combination of written proficiency tests and commanders' evaluation reports.

Recognition of the Army's enlisted personnel who carry heavy responsibilities has been enhanced by the addition of two new pay grades at the top of the enlisted pay structure, and promotion to these grades as well as to other enlisted grades eventually will be related to the Enlisted Evaluation System. The Army plans to advance at least 14,500 to the two top grades during the next four years.

Another aim of the Army Enlisted Management Program is to aid in the development of promising enlisted men by further training and education. Upon entering the Army, the volunteer, beginning this month, will have the opportunity of enlisting for a particular occupation of his choosing in which he can show sufficient aptitude. In addition to the many service schools available, career-motivated soldiers may now also apply for college level training in technical, scientific, and managerial areas at Government expense.

Many similar steps have been and will be taken to ensure high caliber in our officer corps.

For example, new tests have been developed to identify the best possible talent for training at the United States Military Academy.

We have a program to increase the number of officers developing foreign linguistic skill in order to prepare them more effectively for vital assignments around the world.

A special program is in operation for the temporary promotion of captains, majors, and lieutenant colonels ahead of the time they would normally be eligible for consideration.

The "best qualified" method of selection has been put into effect this year for all commissioned grades above captain for both temporary and permanent promotion.

In order to increase the retention of highly qualified officers, we have also provided for greater stabilization of duty tours, and extended opportunities for specialization to include a number of new career fields.

A major review of our Officer Education and Training Program was completed this year by a board of distinguished officers. This comprehensive review was conducted to determine the adequacy of the present system to meet the needs of the Army from the present to 1970. The results of this review will be announced in the very near future. I can tell you now, however, that adjustments and refinements to make our system entirely equal to the tasks ahead are already underway. A modern pattern for officer development is emerging which fully recognizes the indispensable part played by the well-trained and dedicated Army officer in building and maintaining the defenses of our Nation, both spiritual and military, in these momentous times.

Leadership Indispensable

Atomic weapons, guided missiles, and air transport have revolutionized stra-

tegic and tactical concepts. Their impact upon the art of war has not even yet been fully assessed. But this we do know—that the highest professional competence and the soundest possible judgment on the part of leaders charged with responsibility for the lives of men in battle, and the success of our mission, are of even more vital importance than they have been at any time in the whole past.

The Army needs, above all, leaders possessed of great imagination, mental mobility, psychological stability, and moral stamina. The best career development policy or program which might be conceived could not produce such leaders in the absence of individual initiative and interest on the part of the officers themselves. The successful Army officer today is a well-rounded person who keeps up to date in every aspect of his profession. He has an inquiring, imaginative mind, and a great thirst for opportunities to improve his professional ability. Attitudes are tremendously important in life, and particularly so in the military service. We need healthy, positive, forward-looking attitudes which contribute to the on-going of the Army.

One of the great virtues of the courses here at the Command and General Staff College is that they are designed to stimulate creative thought. Your curriculum inspires an enthusiasm for discovering new and better solutions to old problems, and helps to develop the habit of considering every aspect of command in the light of future requirements rather than past performance. This habit is one of the most important any officer can nurture.

Knowledge of Science

Because science and technology play such an increasingly important part in shaping military doctrine and operations all along the line, it behooves every officer to dig in and acquire at least a rudimentary knowledge of scientific and technological principles and applications. For

example, regardless of his immediate duties, he should learn all he can about guided missiles, ballistic missiles, rockets, and similar matters of vital concern to our modern Army. Only by the fullest interchange of informed thought at all levels can the problems in this field be successfully solved. Furthermore, a reasonably thorough grounding in basic science and technology will make an officer of greater value in any assignment, and may in the course of his career open up whole new vistas of opportunity for constructive and satisfying service.

Every officer should develop a fundamental understanding, appreciation, and acceptance of the interdependence of each of our Armed Forces, and the forces of our allies, in the attainment of success either in the deterrence of aggression or the winning of any war. No longer can an Army officer at any level afford to compartmentalize his thinking, and consider only his own branch, his own service, or even the forces of his own Nation. The effectiveness of joint and combined operations stems not so much from carefully worked out plans as from a habit of mind. It is necessary that in every case we visualize the military picture as a whole—not just our particular part of it—and with that vision act in complete harmony with all concerned to achieve a single, positive result.

Students here at the Command and General Staff College are especially fortunate because they are able to attend classes side by side with outstanding officers of 44 allied nations. Every student ought to make the most of these contacts in order to develop to the fullest degree that mutual understanding and respect which is the only solid foundation for effective mutual security.

In addition to leadership for war, leadership for peace has become a major concern of the military officer. Within the last 20 years the soldier has evolved into the soldier-statesman. Many officers at the

top levels of the Army have contributed immensely to our national security, and the realization of our national objectives, by brilliant accomplishments not only in the strictly military sphere, but also in the field of international diplomacy. During the course of your careers, many in this audience will undoubtedly be called upon to participate in high councils by means of which the nations of the world will seek some practical resolution of differences which stand in the way of enduring peace. The well-rounded officer will conscientiously prepare himself in every possible way for this great responsibility.

Management

The necessity for good management in the Army cannot be overemphasized. Any waste or inefficiency in the employment of money, material, or manpower is directly reflected in reduced combat power—and combat power is the root and branch of the Army's ability to carry out its historic responsibilities for national security. To have the strength needed to see us through any future emergency, we must make the best possible use of every resource entrusted to us. We must also bear it firmly in mind that the Army must have the full confidence and support of the American people. These are essential to its continued effectiveness as a military instrument. To gain and maintain public confidence and support we must conscientiously apply the best management principles all along the line to ensure a maximum return in defense for every dollar expended and every American boy called to the colors. However prosaic it may seem, every officer must adjust his vision to the importance of good management in every sphere, and put its precepts into practice wherever he wields authority or influence.

The truly effective Army officer will be a vocal advocate of the Army. In all his contacts with the other segments of the American community, he will endeavor to

contribute in a positive way to the enlightenment of public opinion. He will seek to enhance public understanding of the vital role of the Army as a member of our Defense Team, and stimulate public realization of its accomplishments. The highlights of progress the Army has made during the past year alone are indeed impressive.

Army Achievements Impressive

All Active Army divisions were reorganized as pentomic divisions to ensure that they will be fully capable of successful combat operation on any battlefield—conventional or nuclear.

We deployed overseas two missile commands and several separate missile battalions.

We increased the effectiveness of *Nike Ajax* battalions on constant guard in the United States against air attack, and also sent *Nike Ajax* battalions to Europe to defend depots, airbases, and vital bridges.

We began the systematic conversion of *Nike Ajax* battalions in the Continental United States to the longer range and more powerful *Nike Hercules*. *Hercules* battalions are now deployed and operational in Taiwan, Okinawa, and Greenland.

With the addition of the *Hawk* to our air defense arsenal we will be able to cover the whole span of altitudes from the treetops to the highest flown by planes, and every type of aircraft now in operational use at any known speed.

The formation of STRAC, the Army's Strategic Army Corps, added immensely to our deterrent capability.

In the field of space exploration, we are tremendously proud of having placed in orbit the free world's first earth satellite, the *Explorer* on 31 January 1958. Then on 26 March, *Explorer III* went up, and on 26 July, *Explorer IV*. The coded in-

formation about space which has poured down to earth from these manmade "moons," particularly concerning high-level radiation, has proved to be of tremendous value. The latest Army achievement in this field was the instrumentation of the *Atlas* missile which the Air Force put into orbit last 18 December. Intricate electronic relay equipment developed by the Army Signal Corps at Fort Monmouth, New Jersey, broadcast from the orbiting missile the voice of President Eisenhower delivering a Christmas message. This was the first time a human voice had ever come to us from outer space.

Conclusion

We should all look upon each achievement not as a goal reached, but as a milestone on the path of progress toward maximum strength for peace and security. What has been accomplished so far is only a beginning. The brightest pages of our Army's history are still unwritten, —of this I am sure. What the hand of time will eventually inscribe upon them depends in large measure upon the ingenuity, the determination, the vigor, and the devotion above and beyond the call of duty each of us brings to the tasks which lie before us.

As America marches forward with courage, conviction, and confidence to meet the future, an increasing burden of responsibility is laid upon this great College as a major source of education—and, above all, of inspiration—for our Nation's military leadership. Its influence during the long years past has redounded to the tremendous benefit of our country, yet I am certain that its greatest achievements, like those of the Army as a whole, lie ahead. It is in that faith that I now dedicate, on behalf of the United States Army, this new building—the J. Franklin Bell Hall.

DEDICATED TO THE SECURITY OF THE NATION

Major General Lionel C. McGarr, *United States Army*

Complete text of remarks made by Major General Lionel C. McGarr at the dedication of J. Franklin Bell Hall and presentation of The Honorable Wilber M. Brucker, Secretary of the Army, on 14 January 1959.—Editor.

SECRETARY Brucker, honored guests, ladies and gentlemen. It is my privilege this morning to welcome you to Fort Leavenworth, home of the United States Army Command and General Staff College. Here today we join in dedicating this modern academic building as a fitting symbol of the spirit of improvement and progress which characterizes our Army today.

As current Commandant, I feel it appropriate that I say a few words on this important and symbolic occasion. Although proud of recent accomplishments, I am acutely and humbly aware of the contribution of my illustrious predecessors in making the College what it is today.

In this tension-laden era, conditioned by the deadly clash of opposing ideologies, we remain dedicated without complacency or compromise to educating and improving the *minds* of the Army's future leaders. This requires changing their thought processes by increasing their ability to *reason* objectively, *decide* logically, and *operate* effectively in the application of the all-important principles of warfare.

Only by so developing *flexibility* of mind can the inspired leadership necessary for success on future battlefields be developed. This is our mission. There is no easy way.

Scholastic Foundation

It has been so truly said that war is an art based on *scholastic* foundation and resting on a free and creative activity. Warfare is an Art, one whose very heart and soul is the spirit of service and sacrifice to the ideals of our country. The overall competence and sacrifice required of the professional military leader can be even more demanding than that required of other important professions. For the combat leader's success is not measured purely in *material* accomplishments such as wealth, power, and prestige but rather in terms of victory at the least possible cost in human life and even the ultimate survival of the Nation. And remember, the soldier cannot "actively practice" his art before he must apply it for record on the battlefield.

Realizing this significant restriction, the College is convinced that in the future, as in the past, an important part of America's preparation for war must be in the classrooms of our military schools and colleges. It is equally convinced that the protracted warfare now being waged by international communism, although not fought with bombs and bullets, is all the

The United States Army Command and General Staff College stresses the necessity to develop flexibility of mind in order to produce the inspired leadership so essential for success on future battlefields

more deadly because it is fought with ideologies—with ideas which threaten our very way of life—and its objective is the primary objective of all autocratic rulers—conquering the minds of men. We must counter this ideology which is completely opposed to ours in religious, political, and ethical concept. We must counter it with the *practical* application of the ideas and ideals of humanity and the dignity of man—which, after all, are based on the simple truths of service and sacrifice our Savior taught.

Psychological and Moral Factors

The strength of any nation lies in the moral and intellectual strength of its people. This applies with equal force to the Armed Forces. Character and a sound moral code of ethical values have always been the hallmark of the dedicated professional officer. One of the principal elements of the new College curriculum is

Major General Lionel C. McGarr was graduated from the United States Military Academy in 1928 and subsequently served with the 25th, 24th, 21st, and 30th Infantry Regiments. He went to French Morocco with the 30th Infantry Regiment, 3d Division, in 1942 serving in combat there and in Italy. He became Commander of the 30th Infantry in 1943 in which capacity he served in Italy, France, and Germany. He was named Assistant Commander, 3d Infantry Division in Germany where he served until November 1945. He graduated from the National War College in 1947 and was assigned to the Intelligence Division of the Army General Staff that year. He commanded the 350th Infantry Regiment in Austria, was Tactical Inspector of US Forces in Austria, and in 1951 was named Chief of Staff of the Tactical Command of these forces. In July 1952 General McGarr went to Korea as Assistant Commander of the 2d Infantry Division, later becoming Commanding General of the United Nations Prisoner of War Command. He assumed command of the 7th Infantry Division in Korea in October 1953. In 1954 he was designated CG USARCARIB in the Canal Zone. He assumed command of the U. S. Army Command and General Staff College in July 1956.

strong emphasis on the importance of the educational intangibles—the psychological and moral factors which improve combat effectiveness. The student is taught that it is normal and realistic to integrate the *intangible* moral and ethical aspects of command into the more *tangible* tactical and administrative aspects, in his decision making and problem solving. This is because the College strongly believes the only motivations which can sustain men under the stress of battle are those of a spiritual or moral nature.

Here in the Army's Senior Tactical School we strive to build into our students the character, integrity, and intelligence required by the destructiveness and reliability which the fast moving pace of technology is building into our weapons systems. This requires the urgent development of the full *human* potentialities of our students—the development of the *complete man*—because MAN properly trained, motivated, and led will always remain the constant factor in success on the battlefield.

We are fortunate to be living in a most exciting era in history—one in which the frontiers of science and technology are advancing at a pace beyond our boldest dreams. This advance is forcing a cosmic awakening in which it is becoming more and more evident that what the mind of man can conceive, he can develop. And, as his imagination leaps out beyond the stars, we must realize that what man can invent he can control—if he so desires. Therefore, it is most important that our mental processes not be dulled by automation, or be dominated by the purely technical aspects of this sweep of science. They must be geared to *leading* and *guiding* technology along purposeful lines in the resolution of our many military problems and, equally as important, in assuring constructive human progress. This chance for progress, possibly even our very hope of survival, lies in molding the minds of our leaders in the direction of progress.

Bell Hall a Tribute

The dedication of this building as Bell Hall is a tribute to a great American, a great military educator and a former Commandant—General James Franklin Bell. At the turn of the century he assisted Secretary of War, Elihu Root, the father of the U. S. Army General Staff System and the Military School System, in establishing the basis of our modern Army educational structure. General Bell's concept of relating instruction to education in the broad principles of war, rather than to specific techniques is still valid. He believed in appealing to the intelligence, reason, and patriotism of the individual soldier and his progressive thinking is shown by this famous remark:

I earnestly pray that the idea so tenaciously clung to in our old army, that a soldier was not expected to think, his only duty being to obey, has had its day and will forever be left to repose upon the scrap heap of other discarded military notions.

Our Commander in Chief, President Eisenhower, aptly described the College purpose in the following words:

In Leavenworth the tradition is hard work—hard work at the most serious of all military tasks—that of preserving American interests against aggressive force. In Leavenworth's classrooms war is reduced to fundamentals learned so exhaustively by the student that they come to him thereafter as second nature. So equipped in battle, the graduate is free for the fullest exercise of inspirational leadership. . . . [Leadership] in shaping armies of the free world that may some day stand as civilization's last, but sure, defense.

This is so because warfare is not merely a pattern of mechanical energies and nuclear forces but one of human beings, their sense of values, and their reactions under varying pressures and conditions.

True, our Nation's military forces and the professional leaders trained here can have but one final measure of success in war—victory on the battlefield. However, it should be kept in mind that although this is a military College, it also has the broader mission of training and educating leaders to help win the peace. In this respect our Allied Officers' Program, training officers from approximately 44 countries of the free world, contributes significantly to the solidarity of the free world.

One Objective

With the addition of Bell Hall, the College now combines the most modern equipment with a reoriented, modernized curriculum based on improved instructional methods and a forward-looking educational philosophy. However, like technology this fine building and its most advanced instructional aids are of limited value if not properly oriented toward one definite objective—the security of our Nation!

In accomplishing this objective the United States Army Command and General Staff College pledges itself to educating and rededicating its students in the ideals of service and sacrifice, of improvement and progress—ideals which are the very wellsprings of our country's greatness.

And now, it is most fitting and appropriate that we are again honored by the presence of The Honorable Wilber M. Brucker, Secretary of the Army, who will make the dedicatory address. It is appropriate, not only because he is a decorated combat leader of World War I, a former Governor of the State of Michigan, and an eminent member of the legal profession, but also because he is a forward-looking, dedicated civil leader, without whose interest and support Bell Hall would not have been possible. It is my pleasure and honor to present the Secretary of the Army, The Honorable Wilber M. Brucker.



This recent excellent United States Navy aerial photo shows the heart of Fort Leavenworth, Kansas, and J. Franklin Bell Hall at right center just below the old Missouri River bridge. At the upper left corner of Bell Hall is located Gruber Hall and directly above are Andrews and Sherman Halls. To the north is Sherman Army Air Field.

Ad Bellum Pace Parati



(Prepared in Peace for War)

There are many important dates in the history of Fort Leavenworth, and to the list of the most important a new one has been added.

The first, of course, was that day in May of 1827 when Colonel Henry Leavenworth, a man who could negotiate fairly with Indian tribes or who could fight them skillfully if the need arose, selected the

had opened a law practice at Leavenworth, ordered the establishment of a "School of Application for Cavalry and Infantry" at the Fort.

About the time the school was being established a young West Point graduate, Lieutenant James Franklin Bell, was busily engaged in vigorous campaigns against the Indians with the famed 7th Cavalry.



First school building at Leavenworth now is Army National Bank and Finance Office site of Fort Leavenworth on the Kansas Territory bluffs above the Missouri River.

William Tecumseh Sherman, in pleasant retirement after the Civil War, was drawn back into public life as Commander of the Army of the United States in 1876. With few funds and limited authority, he at once resolutely set about the task of rebuilding the Army. This resulted in another important date in Fort Leavenworth history, for it was on 7 May 1881, almost 54 years to the day after Colonel Leavenworth established the original cantonment, that General Sherman, who once



Gruber, formerly a riding hall, was home of Regular Course for a number of years

It was Bell, one day to become Chief of Staff of the US Army, who added another significant date. In 1903, after working with Secretary of War Elihu Root to develop an over-all plan for the reorganization of the Army's educational system, Bell became Commandant of the Infantry and Cavalry School, the Signal School, and the Staff College at Fort Leavenworth. During the three years he served as commandant of the schools he became known as the founder of the modern method of instruction in the US Army.

In the nearly 78 years since it opened,

the school at Fort Leavenworth has grown in stature and broadened in scope, despite interruptions and numerous changes in name, until today as the United States Army Command and General Staff College it is outstanding among the distinguished institutions which develop and temper the military leaders of the free world.

The latest important date occurred on



Sherman, home of school before Gruber was remodeled, until recently housed Staff, Faculty, and much of Post Headquarters

14 January 1959 when the United States Army's senior school for the tactics of the combined arms and services dedicated a long-needed academic building.

J. Franklin Bell Hall, one of the finest



Andrews Hall, a converted gym, was home for the Associate Course for several years

and most modern educational buildings in the Nation—or the world—was dedicated by The Honorable Wilber M. Brucker, Secretary of the Army.

The dedication program, witnessed by 1,400 guests, including leaders from the political, educational, and military fields, took place in the beautiful main audi-

torium of J. Franklin Bell Hall. Following a concert by the 371st US Army Band, Chaplain (Lieutenant Colonel) William B. Sharp gave the invocation. Major General Lionel C. McGarr, Commandant of the USA CGSC, presented the opening remarks and introduced the guest of honor and featured speaker, The Honorable Wilber M. Brucker. The Secretary of the Army delivered the dedication address



General McGarr, Commandant of the U. S. Army Command and General Staff College, breaks ground for Bell Hall on 5 Nov 1956

and then, with General McGarr, participated in the symbolic laying of the cornerstone, following which he unveiled the memorial plaque dedicating the new building to Major General J. Franklin Bell. After the benediction by Chaplain (Lieutenant Colonel) Urban J. Wurm, the band closed the simple but impressive ceremony with the national anthem and the guests separated into small groups to tour the new building.



This view, taken from the northeast at a point approximately above the Missouri River, shows the new academic building as it neared completion and before landscaping was finished. The near end of the first wing houses the command section on the ground floor. The center wing contains the library on the second floor and the archives on the third. The big windows on the two-story wing protruding to the right bring light into six of the 24 classrooms, and the three-story auditorium extends to the rear.



Secretary Brucker, right, meets dignitaries: Congressman William H. Avery of Kansas; General Bruce C. Clarke, Commanding General, US Continental Army Command; Mr. Harry W. Colmery, Civilian Aide to the Secretary of the Army for Kansas; Charles S. Stevenson, Civilian Aide for Missouri; and General McGarr, Commandant, USA CGSC.



Secretary Brucker



General Taylor

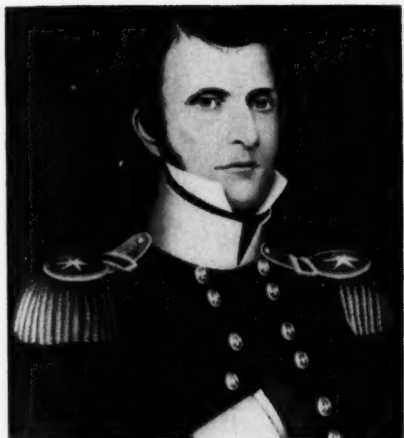


General Clarke



General Arnold

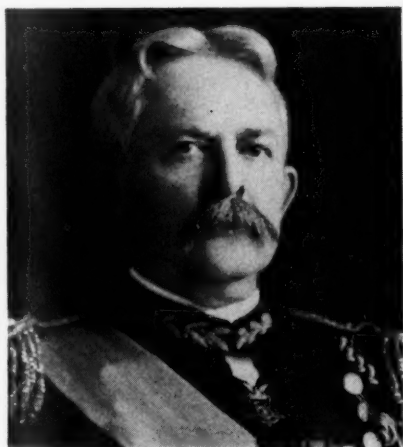
Important to the United States Army Command and General Staff College and instrumental in the provision of the outstanding new academic building are these military leaders: The Honorable Wilber M. Brucker, Secretary of the Army; General Maxwell D. Taylor, Chief of Staff of the US Army; General Bruce C. Clarke, Commanding General of the US Continental Army Command; and Lieutenant General William H. Arnold, Commanding General of the Fifth US Army which covers the central United States.



General Leavenworth



General McGarr



General Bell



General Zierath

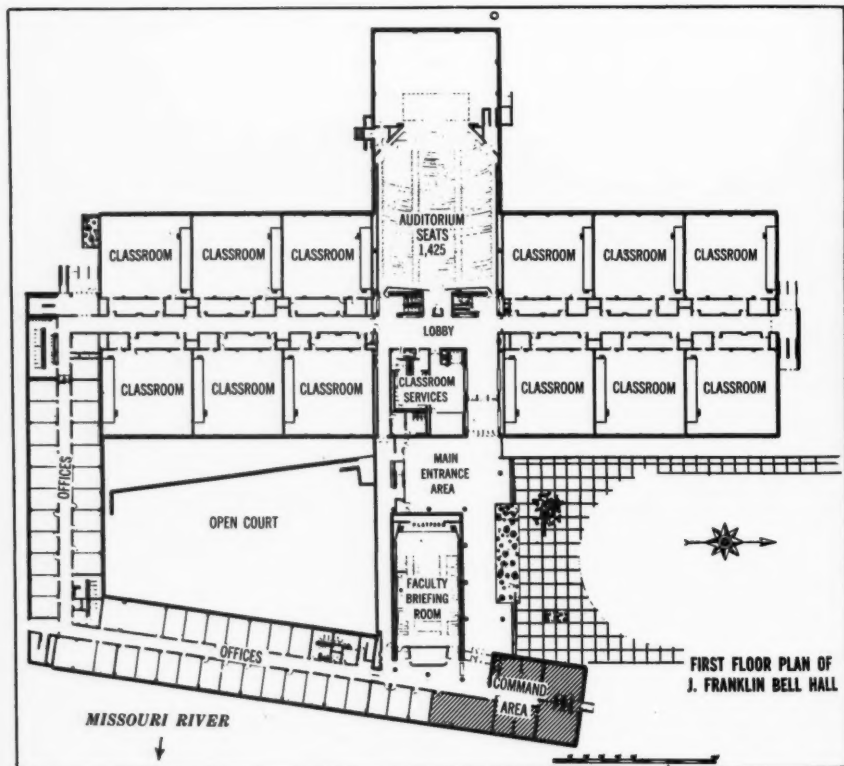
Prominent in the historic past and the dynamic present of Fort Leavenworth are Brigadier General Henry Leavenworth, founder of the post which bears his name, left above; Major General Lionel C. McGarr, Commandant of the U. S. Army Command and General Staff College, right above; Major General J. Franklin Bell, former Commandant and Chief of Staff of the US Army, for whom the new academic building is named, lower left; and Brigadier General Frederick R. Zierath, Assistant Commandant of USA CGSC, lower right.



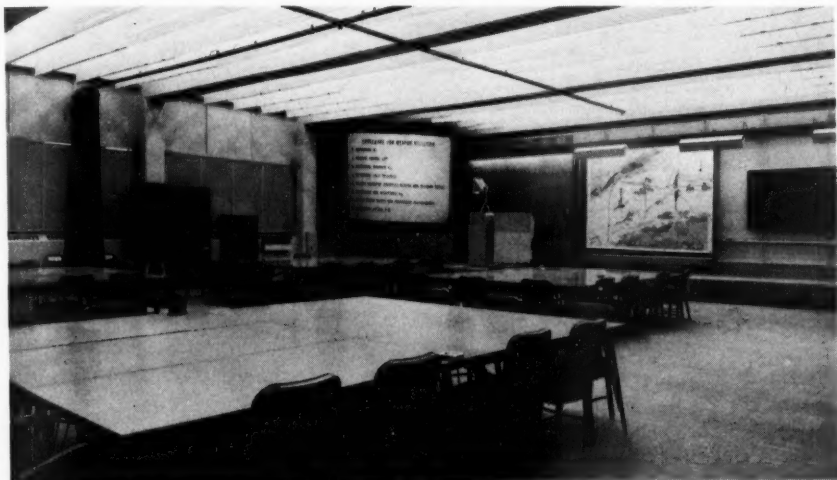
Flags of the US and allied nations line the entrance driveway of the new academic building and a huge replica of the "Leavenworth Lamp," symbol of the USA CGSC, dominates the courtyard on the morning of the dedication. Lettered in the windows of the archives on the top floor of the wing in the background is "PROGRESS FOR PEACE," while the windows of the library on the floor below display the insignia of the arms and services of the US Army. The scene below shows Secretary of the Army Brucker delivering his dedication address in the beautiful auditorium of the new building.



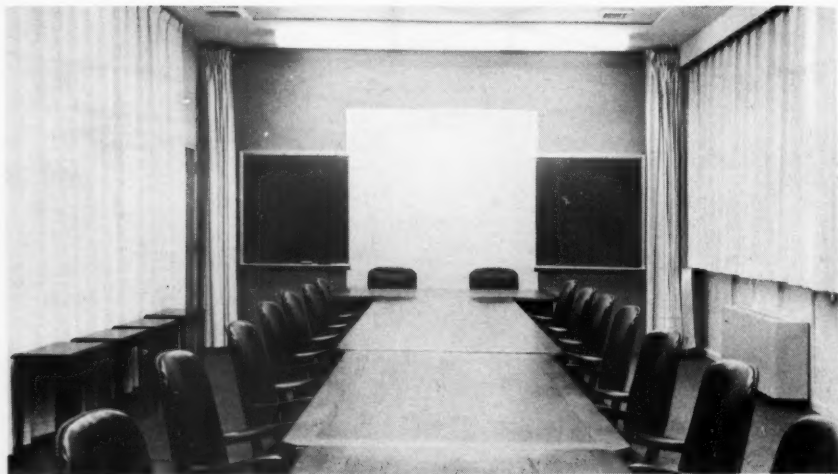
In the top picture General McGarr and Secretary Brucker complete the symbolic laying of the cornerstone on the stage of Bell Hall's auditorium. Below, at the conclusion of the dedication, Secretary Brucker unveils the memorial plaque which dedicates the new building in the name of Major General J. Franklin Bell, United States Army.



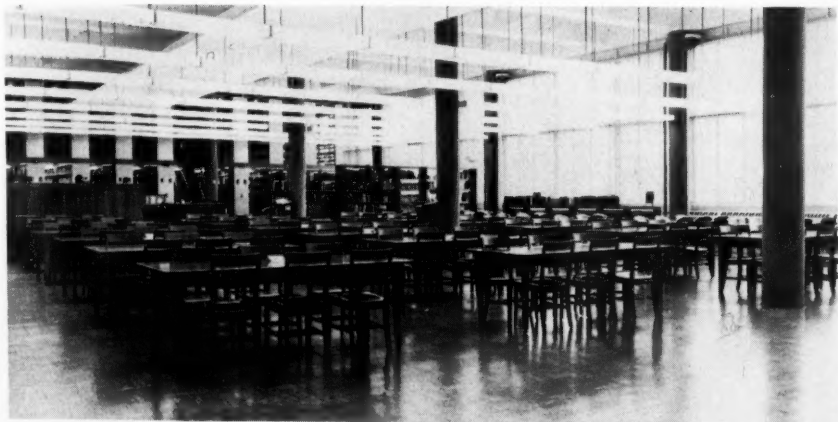
This first floor outline plan of Bell Hall graphically portrays the manner in which the new building, the finest academic structure west of the Mississippi River, is laid out in the shape of a figure "4." There are twenty-four 50-man classrooms on two floors of the main wing. Every classroom has one wall of windows. The auditorium and its huge stage, complete with orchestra pit and dressing rooms in the basement, takes up three floors in the wing projecting to the west. The center of the main wing is occupied by the classroom service offices and on the ground floor of the cross-wing is a Staff and Faculty briefing theater seating 306 people. The other two wings, three stories high, house Command and Staff and Faculty offices. The basement of the main classroom wing has other offices as well as a cafeteria and coffee shop, map library, and supply, administration, operations, and shipping rooms. Additional offices are to be constructed in the already-excavated basement of the two Staff and Faculty wings.



At the top is a scene in one of the 24 virtually identical classrooms. Work tables and chairs, here in four groups, may be arranged in many patterns, and the heavy curtains, drawn back when this picture was taken, can divide the room into two or four work sections. The large transparency projection screen is visible from all corners of the room and the stage is equipped with a lectern and a number of chalkboards, mapboards, and sliding panels. The bottom picture shows the tiers of seats rising steeply toward the fully equipped projection room in the Staff and Faculty briefing theater.



One of the features of the Command area of the eastern wing's first floor is this conference room, above, which is near the Commandant's office. Chalkboards and mapboards on the wall, as well as a projection surface, make the room suitable for any type of small conference or briefing. Below is a view of one end of the spacious College archives situated on the third floor of the cross-wing. Each shelf of these special rotating file cabinets is capable of holding as much reference material as the standard four-drawer filing cabinet, and the material is much more readily accessible. The archives is a completely secure area and has room for many years of expansion.



The above view shows the spaciousness and superior lighting of the library on the second floor of the main cross-wing. In the rear are the book stacks which have room for many years of growth. Not shown are a row of private study offices down the left side of the reading room. Below, General McGarr presents a certificate making Secretary Brucker an honorary member of the United States Army CGSC Staff and Faculty.



Secretary Brucker "signs in" as an honorary member of the Staff and Faculty. Looking on approvingly are Mr. Charles S. Stevenson, Mr. Brucker's Civilian Aide for Missouri, and General McGarr. Below left, General McGarr presents Secretary Brucker an engraved miniature of the famed "Leavenworth Lamp," symbol of the U. S. Army Command and General Staff College. On the right are General Clarke, Secretary Brucker, and Generals Arnold and McGarr. (All photos except the first aerial view are US Army photos.)

COMMANDANTS OF THE UNITED STATES ARMY
COMMAND AND GENERAL STAFF COLLEGE

| <i>Commandant</i> | <i>From</i> | <i>To</i> |
|--|----------------|----------------|
| 1. Colonel Elwell S. Otis | November 1881 | June 1885 |
| 2. Colonel Thomas H. Ruger | June 1885 | May 1886 |
| 3. Colonel Alexander McD. McCook | May 1886 | August 1890 |
| 4. Colonel Edwin F. Townsend | August 1890 | October 1894 |
| 5. Colonel Hamilton S. Hawkins | October 1894 | April 1898 |
| 6. Colonel Charles W. Miner | September 1902 | June 1903 |
| 7. Brigadier General J. Franklin Bell | July 1903 | June 1906 |
| 8. Brigadier General Charles B. Hall | August 1906 | April 1908 |
| 9. Major John F. Morrison (Acting) | April 1908 | August 1908 |
| 10. Brigadier General Frederick Funston | August 1908 | January 1911 |
| 11. Brigadier General Ramsay D. Potts | January 1911 | February 1913 |
| 12. Lieutenant Colonel William P. Burnham (Acting) | February 1913 | August 1914 |
| 13. Brigadier General Henry A. Greene | September 1914 | August 1916 |
| 14. Brigadier General Eben Swift | August 1916 | November 1916 |
| 15. Lieutenant Colonel James W. McAndrew | November 1916 | June 1917 |
| 16. Lieutenant Colonel Charles H. Miller | June 1917 | July 1917 |
| 17. Colonel William A. Shunk | July 1917 | July 1919 |
| 18. Major General Charles H. Muir | July 1919 | August 1920 |
| 19. Colonel Lucius H. Holbrook | August 1920 | September 1920 |
| 20. Brigadier General Hugh A. Drum | September 1920 | July 1921 |
| 21. Brigadier General Hanson E. Ely | August 1921 | June 1923 |
| 22. Brigadier General Harry A. Smith | July 1923 | June 1925 |
| 23. Brigadier General Edward L. King | July 1925 | July 1929 |
| 24. Major General Stuart Heintzelman | July 1929 | February 1935 |
| 25. Major General Herbert J. Brees | February 1935 | June 1936 |
| 26. Brigadier General Charles M. Bundel | June 1936 | March 1939 |
| 27. Brigadier General Leslie J. McNair | April 1939 | October 1940 |
| 28. Brigadier General Edmund L. Gruber | October 1940 | May 1941 |
| 29. Brigadier General Horace H. Fuller | June 1941 | November 1941 |
| 30. Colonel Converse R. Lewis (Acting) | November 1941 | March 1942 |
| 31. Major General Karl Truesdell | March 1942 | November 1945 |
| 32. Lieutenant General Leonard T. Gerow | November 1945 | January 1948 |
| 33. Lieutenant General Manton S. Eddy | January 1948 | July 1950 |
| 34. Brigadier General Harlan N. Hartness (Acting) | July 1950 | October 1950 |
| 35. Major General Horace L. McBride | October 1950 | March 1952 |
| 36. Major General Henry I. Hodes | March 1952 | March 1954 |
| 37. Brigadier General Charles E. Beauchamp (Acting) | March 1954 | July 1954 |
| 38. Major General Garrison H. Davidson | July 1954 | July 1956 |
| 39. Major General Lionel C. McGarr | July 1956 | |

CHRONOLOGY OF FORT LEAVENWORTH AND THE UNITED STATES ARMY COMMAND AND GENERAL STAFF COLLEGE

1827—War Department Order Number 14, dated 7 March, directs Colonel Henry Leavenworth to move out from St. Louis and establish a permanent cantonment on the Missouri River near the mouth of the Little Platte to protect trade routes to the west.

On 17 April Colonel Leavenworth leaves St. Louis at the head of four companies of the 3d Infantry.

Approximately 8 May Colonel Leavenworth pushes beyond the mouth of the Little Platte and selects a site on the higher west bank of the Missouri.

War Department approves site selected for Cantonment Leavenworth on 19 September.

1832—Cantonment Leavenworth becomes Fort Leavenworth.

1834—Elements of the elite 1st Dragoons Regiment, created in 1833, stationed at Fort Leavenworth.

Campaigning against Shawnee and Comanche Indians, Colonel Leavenworth contracts fever and dies four days before word of his promotion to brigadier general reaches Fort Leavenworth.

1854—Congress establishes Kansas and Oklahoma territories. Fort Leavenworth territorial capital from 2 October to 24 November.

1881—By General Orders Number 42, 7 May, General Sherman, Commander of the Army, orders establishment of a "School of Application for Infantry and Cavalry" at Fort Leavenworth. Orders implemented by General Sheridan, commanding Division of the Missouri and General Pope, commanding Department of the Missouri with headquarters at Fort Leavenworth. Colonel Elwell S. Otis of 20th Infantry appointed to organize school and serve as first Commandant.

1886—Name changed to "United States Infantry and Cavalry School."

School moved from original site in building now housing Army National Bank to Sherman Hall which had been an Ordnance Arsenal warehouse and shop building.

1898—School recessed when instructors and students ordered away to fight in Spanish-American War.

1902—School reopened as the "General Service and Staff College." Mission expanded and course completely revamped under influence of Secretary of War Root. Mission of school to present instruction for all arms of the service, for officers recommended for proficiency attained in officers' schools conducted on various posts. Officers of National Guard, former volunteer officers, and graduates of civilian military schools and colleges included. Army War College founded in Nation's Capital.

1903—Brigadier General J. Franklin Bell, who had assisted Secretary Root in planning revitalized Army Educational System, sent to Leavenworth as Commandant.

1904—School becomes "Infantry and Cavalry School and the Staff College." Complete course two years with all students attending first year and selected ones staying for second year.

1905—Redesignated the "United States Infantry and Cavalry School" and decision made to augment the number of students; include higher ranks, and increase branch representation to include Engineer, Signal Corps, and Field Artillery officers in addition to those from the Infantry and Cavalry. Captain established as minimum rank for students.

1907—Basic school name changed again, this time to the "Army School of the Line."

1908—Army School of the Line merged with other schools and entire group designated "Army Service Schools."

1910—Army Field Engineer School and Army Field Service and Correspondence School for Medical Officers added to the significant Army Service Schools group at Fort Leavenworth.

WW I—Army Service Schools suspended again as instructors ordered to duty with troops. Graduates of recent years establish an excellent and lasting international reputation for Fort Leavenworth by their performances in key positions throughout the American Expeditionary Force in France.

1919—Leavenworth school system reopened as the "School of the Line and the General Staff School."

1920—National Security Act extends Elihu Root's broad military education concept by establishing a system of progressive military education for Army officers. System to include branch schools for all arms and services. "Army School of the Line and the General Staff College" reorganized as a post-graduate institution designed to prepare students for higher command and staff positions.

1922—With major reorganization complete, name is changed to "General Service Schools."

1928-29—Course which had been cut to one year goes back to two and school name changed to "Command and General Staff School."

1935—Course again shortened to one year.

WW II—School continues to operate. Courses shortened and increased in number. Twenty-seven regular classes during World War II turn out 18,000 graduates for Army (including Air Corps), Navy, and Marine Corps. Orientation courses for commanders and staffs of newly activated divisions also conducted, plus Army portion of special Army-Navy Staff College course and courses for officers from Spanish-American countries. Sheridan-Grant-Sherman Hall building cannot accommodate student classes, so former riding hall rehabilitated and named for General Gruber, Commandant in 1940-41 and the officer who wrote the Field Artillery Song (now "The Army Goes Rolling Along.") School also expands into Muir Hall, a former stable, and Andrews Hall, a former gymnasium.

Leavenworth analyzes World War II problems of global strategy and tactics, mobilization and employment of personnel and matériel, and time and space factors to isolate lessons in light of their impact on educational needs of officers of Army. Detailed survey results in definite officer career program and reorganization of Army's Educational System along lines still in effect.

1946—In recognition of variety of courses taught and higher level of instruction, name of school changed to "Command and General Staff College."

1947—Associate Course established.

Korean War—Regular Course increased from 400 to approximately 620; Associate Course increased to two per year of 320 officers each.

1950—Army War College reopened at Fort Leavenworth.

1951—Army War College moves to Carlisle Barracks, Pennsylvania.

1956—Facilities long outgrown, 84th Congress approves funds for new academic building during summer of 1956. Contract let, ground broken by General McGarr, 39th Commandant, on 5 November and construction begins immediately.

1956—Events of major import during summer of 1956 find College well along in adjusting to nuclear age. Major events are Army's decision to convert to new pentomic divisions and to reflect these divisions completely in 1957-58 instruction; coming of age of nuclear warfare and decision to consider nuclear environment normal for instruction in tactical fundamentals and exercises while also preparing students to fight nonnuclear war with equal facility; need to orient instruction on modern concepts of Army's missions, with increased emphasis on local war; development of new matériel such as nuclear delivery means, air mobility means, advanced electronics. To be effective, entire course must be rewritten for 1957-58 academic year. In one year Herculean task of complete rewrite accomplished, permitting today's curriculum of USA CGSC to be based on most modern doctrine for nuclear Army and on instructional philosophy directed toward meeting challenge of advanced forms and tempo of warfare.

1959—New academic building, superlative \$5,681,000 J. Franklin Bell Hall, dedicated by Secretary of the Army, The Honorable Wilber M. Brucker, on 14 January. General McGarr lays cornerstone.

1958/59 Regular Course, Spring Associate Course, Special Associate Course for senior Republic of China Army officers first occupy building in January and February.

1959-?—Continued growth in stature, educational excellence, and service to free world forecast for the United States Army Command and General Staff College, thanks to the dedicated and intelligent Commandants, staff and faculty members, and students of the past, present, and future.

THE REPULSE AT SARREBOURG

Dr. Leslie Anders

Associate Professor of History, Central Missouri State College

FRENCH public opinion was uneasy in mid-August 1914, for the Germans had been sweeping across eastern Belgium toward France for more than a week. News accounts carried no early hope for arresting the tide. The public disquiet, however, was not reflected in the high command of the French Army, where General Joseph Jacques Joffre had nearly completed concentration of his armies. To Joffre, Plan XVII still looked good, and he was ready to arm its offensive-minded philosophy with the steel and flesh to upset the Germans' strategic plans and transfer the theater of war to the Rhine.

To General Auguste Dubail's French First Army went the honor of leading the counteroffensive designed to throw the German left wing off balance. His four corps assembled in the region southeast of Lunéville, Dubail received his final operational instructions on the evening of 13 August. Jumping off at dawn the next day, First Army would march rapidly into German eastern Lorraine and northern Alsace, into the area defended by Colonel General Josias von Heeringen's German Seventh Army. Supported on his left by two corps of Second Army, Dubail was to clear the region around Sarrebourg and establish French control of several key river valleys in the Vosges Mountains southeast of Sarrebourg.

Joffre wrote:

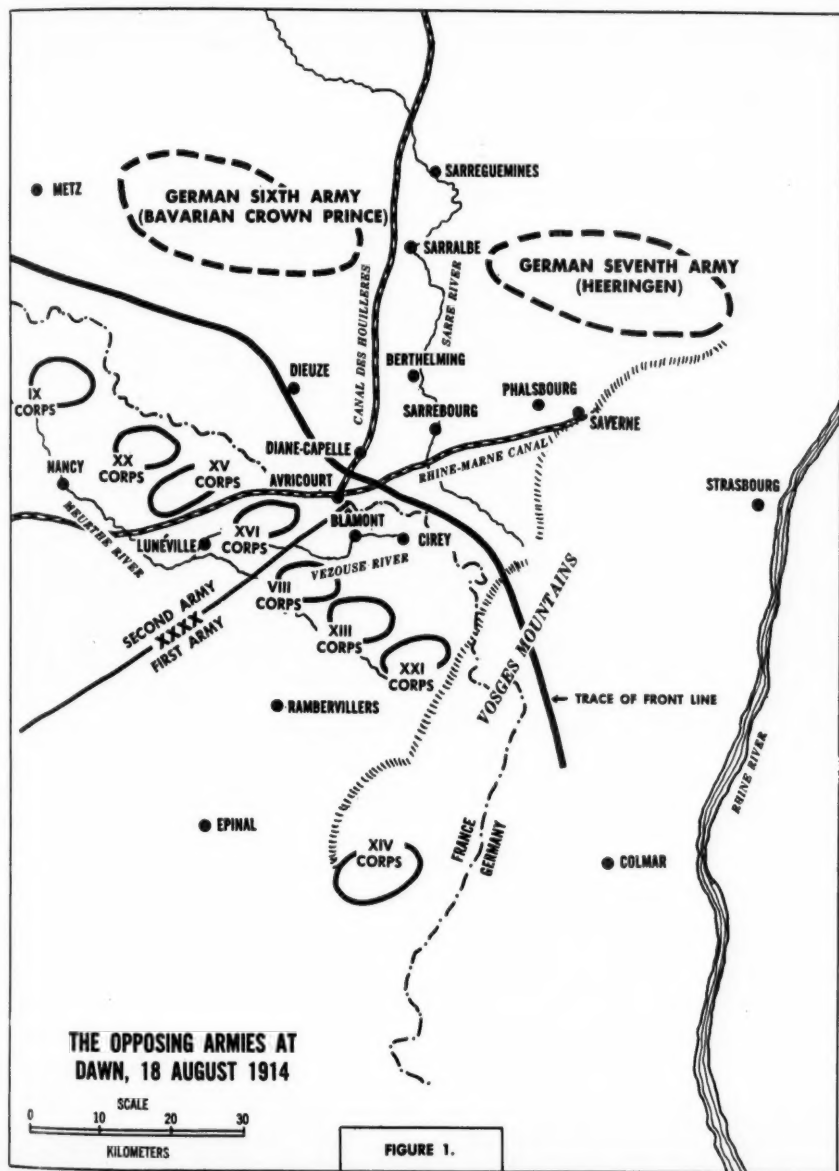
I call your attention to the fact that your army may encounter strong defenses.

Your attacks will have to be well-coordinated and organized in depth. I am placing absolute dependence upon you to assure the success of this operation. You must succeed, and to do so you must throw all you have into it.

The First and Second Armies were marching toward a bloody checkmate of almost apocalyptic proportions in Lorraine. The Sarre (or Saar) River winds northward through a placid countryside where the average person speaks two languages, where family names like Schmidt and Schneider match easily with given names like Pierre and Emile. It is a land of winding roads, small wooded hills, and lake-reservoirs. Here, abound churches of the Roman Catholic and Reformed faiths, and here, the entertainment tastes are reminiscent of those in rural mid-America a generation ago. Nearly every town has two names, one to please the German ear, another the French. In such an environment General von Heeringen was to fashion the repulse at Sarrebourg.

At 0600 on 14 August the First Army marched toward the German frontier on a front of 50 kilometers (see Figure 1). Against negligible German resistance the VIII and XIII Corps drew up just south of Sarrebourg at nightfall 17 August, while the XIV and XXI Corps were mastering the Alsatian highland valleys. Dubail began at once to plan the capture of Sarrebourg.

Although the French offensive at Sarrebourg in August 1914 was not a military success, the leadership displayed by General Dubail, French Army Commander, drew praise from Marshal Joffre, Commander in Chief



Fall of Sarrebourg

At 0800 on 18 August General Dubail telegraphed Second Army Headquarters to make sure of its flanking support in the coming rush on Sarrebourg. Second Army, Dubail thought, could best help by shoving a detachment forward to Berthelming, on the left flank of VIII Corps' line of march. Second Army's chief, General the Vicomte Édouard de Curières de Castelnau, thereupon startled Dubail by questioning his need for flank support.

"GHQ learned last night that Sarrebourg was probably evacuated," Castelnau telephoned back at 0945. However, faced with Dubail's protests, he agreed to place a regiment of infantry at Diane-Capelle (see Figure 1) by midafternoon to assure liaison between the two armies.

During this exchange of messages the VIII and XIII Corps were moving forward. While one regiment of VIII Corps was occupying deserted Sarrebourg at 1430, the main body of the corps drew up along a line extending eastward from Kerprich-aux-Bois to the Sarre at the north outskirts of Sarrebourg. Simultaneously, XIII Corps was taking up the line Schneckenbusch—Brouderdorff—Plain-de-Valsch.

During the day the cavalry corps, detailed from Second Army under General Louis-Napoleon Conneau, galloped across the region hoping to reconnoiter east of the Sarre River. Having passed through

Langatte and Haut-Clocher, it found German resistance too strong to permit crossing the river between Sarraaltroff and Oberstinzel. By evening the tired horsemen were back in bivouac at Gondrexange, mission unaccomplished.

Plans Amid Anxieties

On the morning of the 18th Joffre had begun sending Dubail detailed instructions as to the operations that would follow the seizure of Sarrebourg. Joffre urged development of strong positions around the city and the pushing forward of strong elements toward Fénétrange and Berthelming, on the left, and toward Phalsbourg, on the right, in such a manner that effective enemy counterattacks might be frustrated. In this situation, Joffre thought, Dubail could do without the cavalry corps. Also, that evening Joffre called for reopening the railroad from Avricourt to Sarrebourg.

Reports on the enemy received in First and Second Army Headquarters during the day tended to confirm the precipitate retreat on Fénétrange by General the Ritter von Xylander's Bavarian I Corps, the morale of which was represented as very poor. But the cavalry patrols of VIII Corps, slashing at German infantry around Gosselming and St. Jean-de-Bassel, reported that the bridge over the Sarre at Oberstinzel was barricaded and held in force. About sundown VIII Corps reported the presence of German infantry detachments on the left bank of the Sarre north of Dolving and of considerable other German forces, some digging in on a ridge overlooking the right bank at Sarraaltroff, and others at Reding.

German positions were reported in VIII Corps as being well-organized between Sarrebourg and Phalsbourg, and facing southwestward. The enemy had heavy artillery emplaced just to the east of Sarrebourg between Eich and Reding.

Moreover, according to other reports, the II and III Bavarian Corps had been

Dr. Leslie Anders is the author of "Pétain's Approach to Fame," "Personality in War: Mannerheim," and "Austerlitz—A Clash of Command Systems," which have appeared in the June 1954, February 1957, and June 1958 issues of the MILITARY REVIEW. A graduate of the College of Emporia, Kansas, he holds a Master of Arts degree in history and a Ph. D. from the University of Missouri. During World War II he served in Europe with the 63d Infantry Division. In 1951 he became a historian in the Historical Division, Office of the Chief of Engineers, and is now Associate Professor of History at Central Missouri State College, Warrensburg, Missouri.

detained around Saverne on 17 August. These corps, however, actually were destined for the German Sixth Army front facing Castelnau. Also, during the 18th, aerial reconnaissance detected important enemy formations between Saverne and Sarrebourg, consisting of at least a brigade and possibly a division, with artillery, at Arschwiller, as well as several battalions and batteries around Haarberg.

In summary, as Dubail reported to Joffre at 2030 on the 18th, the enemy was holding the heights northeast of Sarrebourg, with infantry and heavy artillery; the region of Hommaringen and Guntzwiller, together with the route from Phalsbourg, was bristling with trench lines protecting the routes that reinforcements from the east would most likely follow. Major formations of German forces were known to be moving toward Sarrebourg from the east.

Remarkably accurate intelligence reports, simultaneously received, indicated that the German XIV Corps had passed the Rhine moving in the direction of Phalsbourg.

Confronted with this information and by reports of considerable German activity in the Vosges Mountains to the southeast, General Dubail concluded that his forces would be facing a strong enemy counterattack in a matter of hours not only on the flanks of the troops operating around Sarrebourg but also in the Alsatian highlands. He decided that with elements of the VIII Corps he would assault the heights to the northeast of Sarrebourg, with the purpose of pinning down enemy forces in that sector and drawing more of them there, while the XIII Corps and the bulk of the XXI Corps awaited the enemy counteroffensive and held their counterpunches ready.

He resolved, therefore, that the VIII Corps would attack the heights along the right bank of the Sarre, between Reding and Sarraaltroff, with one division, while covering itself toward Dolving by use of

a detachment from the XVI Corps (Second Army) sent to Diane-Capelle on the 18th. The remaining division of VIII Corps, at the moment in army reserve, would assure liaison with the XIII Corps. This latter corps would be required to take up positions along the line from Schneckenbusch to Plain-de-Valsch with advanced guards, while stationing the main body of its two divisions around Nitting and Voyer. XIII Corps was under strict instructions from Dubail to avoid battle until the army commander passed along the word. To the right, the XXI Corps, shorn of one division but reinforced by the Colonial Brigade, would occupy the line Plain-de-Valsch—Walscheid in division strength and hold a brigade toward Abreschwiller at the disposition of the army commander. Dubail instructed the XXI Corps to keep a strong flank guard out to its right.

Following receipt of Dubail's telephoned estimate of enemy activity at 2030, Joffre promptly extended for another day First Army's use of the cavalry corps and called on Second Army to hold itself in readiness to support the operations of the First Army should the enemy counterattack develop as anticipated there.

Push From Sarrebourg

The forward movement of the First Army between 14 and 18 August had brought it to grips with the main German force, including Xylander's Bavarian I Corps, along the Sarre, and the XIV and XV German Corps, also of Heeringen's army, to the east and south. On 19 August, the first day of the Battle of Sarrebourg, the French advance hit its first serious obstacles.

In VIII Corps the 16th Infantry Division had the mission of seizing the heights on the right bank of the river, from Reding to Sarraaltroff, with the support of the corps artillery and the Army's heavy guns, and with its left flank secured by Castelnau's reinforcements at Diane-Capelle. To effect better flank coverage in the changing

situation, the commander of VIII Corps, General Marie-Joseph de Castelli, instructed the regiment at Diane-Capelle to move up to Dolving. The 15th Division was standing in reserve just to the southwest of the outskirts of Sarrebourg.

On the morning of the 19th the 16th Division struck (see Figure 2). Its right brigade (the 31st) marching from Bühl, moved on Eich and Reding; its left brigade (32d) moved toward Sarraaltroff from positions on the left bank of the Sarre north of Sarrebourg. On the extreme left the XVI Corps detachment, having left Diane-Capelle at 0800, marched toward Langatte.

The onslaught of the 31st Brigade carried to the outskirts of Eich, before a hail of enemy artillery fire destroyed its momentum. The 32d Brigade, with great difficulty, attained positions in the woods along the left bank of the Sarre opposite Sarraaltroff. Toward 1030 reports came in to corps headquarters of German infantry debouching from Dolving and marching southward. This inspired General de Castelli to direct the 16th Division to divert its attack toward Dolving with a view to seizing that place and the high ground to the north the better to protect the corps left flank. At the same time he restated his order to the flank detachment, then near Langatte, to rush on toward Dolving to assist in extricating the endangered left flank of the 16th Division. Up to 1030 no serious attack by the enemy in the Dolving sector had developed, except an occasional sortie easily chased back by the patrols of the 16th Division.

At 1000 the cavalry corps, which had moved in force into the region south of Langatte, directed its 2d Division toward Gosselming, hoping to score a breakthrough toward Fénétrange. But the cavalry found the line St. Jean-de-Bassel—Gosselming too strongly occupied by the Bavarian 2d Division to permit a breakthrough. Nevertheless, the support thus provided the 16th Division by the cavalry

and by XVI Corps permitted the division to move its left flank up to Dolving. In view of the terrible losses suffered by the right brigade, pinned down before Eich, the VIII Corps commander came to the conclusion that he could not proceed beyond the line thus far attained northeast of Sarrebourg, north of Hoff, and running through Dolving and its adjoining woods.

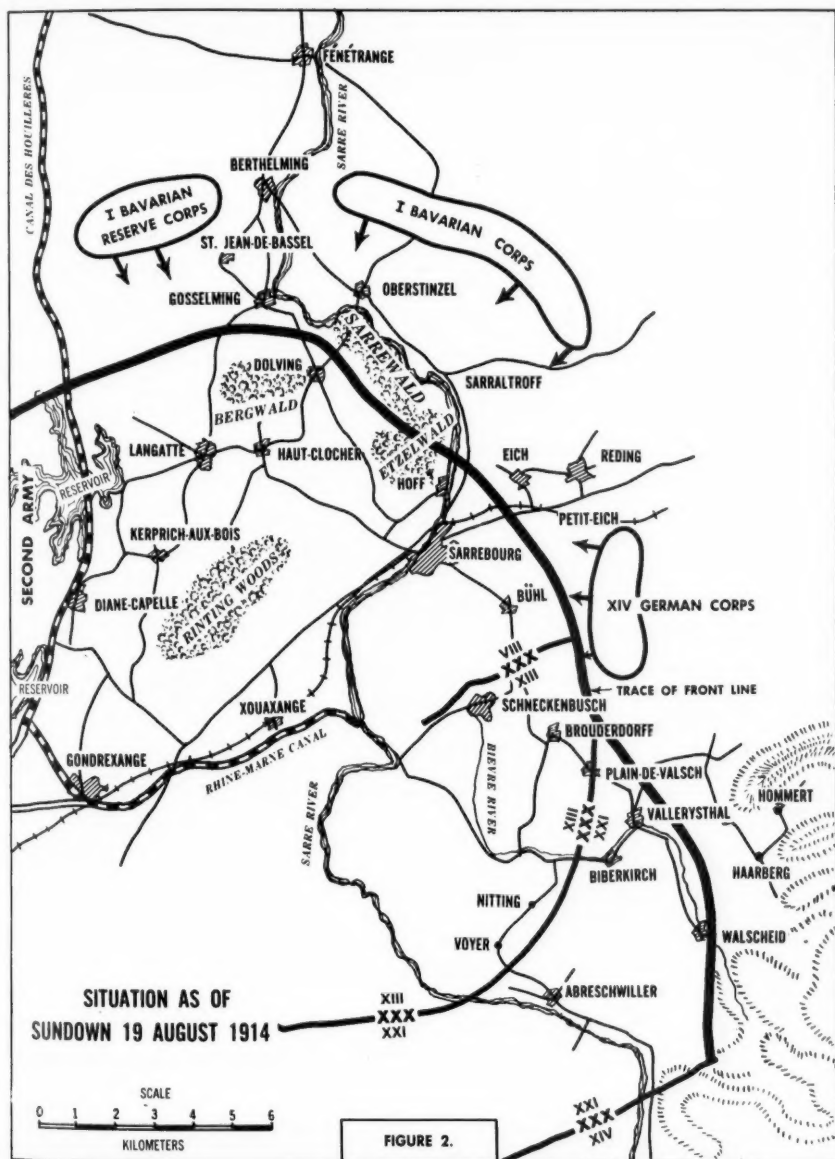
Moreover, it soon was evident that the flank support to be expected of the XVI Corps detachment would be of little lasting value. At 1530 Dubail warned De Castelli that this force was about to leave his flank. Immediately thereafter, at 1600, Second Army Headquarters pulled the unit out of Langatte and across the *Canal des Houillères* into Second Army territory, where Castelnau was fully engaged with Crown Prince Rupprecht of Bavaria and his German Sixth Army.

Over in XIII Corps the situation was relatively quiet. At the close of the 19th it held, conforming to Dubail's orders, the line running from Schneckenbusch to Plain-de-Valsch, its main force concentrated around Voyer and Nitting.

It now remained for XXI Corps to realize its prescribed objective by seizing Walscheid (see Figure 2). This mission fell upon the Colonial Brigade. Without difficulty the brigade took Walscheid during the morning hours of the 19th and even won a foothold on the heights to the east, but its attempts to advance on to Hommert and Haarberg bogged down in the face of stern resistance from the German XV Corps. By sundown, so far as the rest of the corps front was concerned, the 43d Infantry Division was holding a line between Vallerysthal and Plain-de-Valsch with one brigade, which assured contact with XIII Corps. Its other brigade was in army reserve at Abreschwiler.

Bold New Plans

Dubail still regarded an enemy assault of menacing proportions a very distinct possibility to the east of Sarrebourg. Re-



connaissance reports indicated that elements of the German XIV Corps were appearing in the Walscheid area with the mission of covering the approach of a second corps (XV German). Both German corps, it should be noted, thus were accurately identified by French intelligence almost within hours of their appearance on the First Army front. Dubail was, furthermore, determined to draw the enemy forces on the XIII Corps front westward from their wooded entrenchments into the open ground. Additionally, in his dispatch to Joffre at 1600 Dubail proposed to use the 15th Division in a surprise night attack to seize the Sarre bridges at Oberstinzel and Gosselming to permit the cavalry to cross and resume its northward forays by daybreak the 20th.

Dubail immediately began making the necessary dispositions for the impending operations. To assure his troops the necessary rest, he instructed each corps to organize stabilized positions for the night properly protected by advanced guards. He also notified the commander of VIII Corps of the proposed employment of the hitherto uncommitted 15th Division, slated to rush the Sarre crossings around 0300 the 20th.

De Castelli took the necessary measures to establish his troops in bivouacs covered by outposts ranging from northeast of Sarrebourg on the right to Dolving and Haut-Clocher on his left. He planned also to maintain liaison with the cavalry which had for the most part reassembled in the prescribed zone around Kerprich-aux-Bois, Diane-Capelle, and Gondrexange.

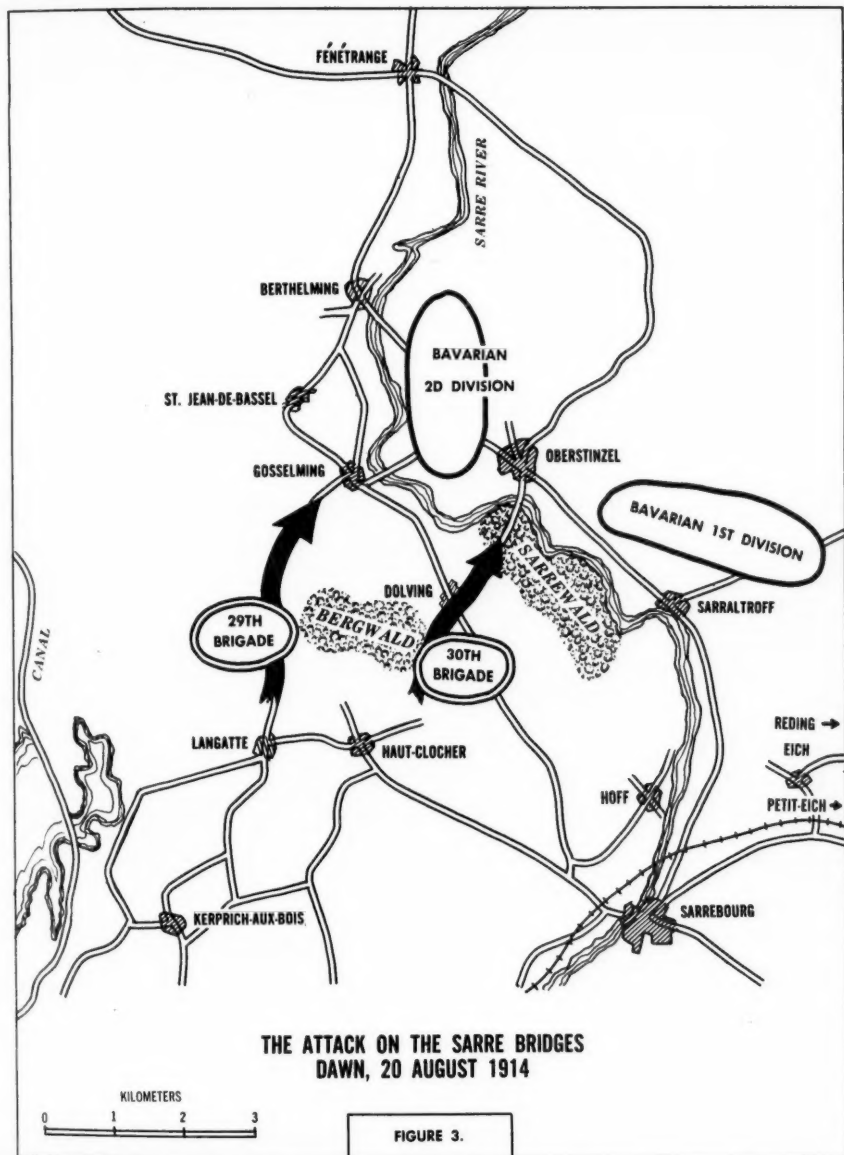
Toward 1700 on the 19th the Germans set in motion an offensive against Dolving, and some of their elements charged out of Gosselming upon the Bergwald. In the face of this threat the commander of the 16th Division instructed his forces to quit Dolving, agreeing that if necessary, the affected troops could fall back as far as the Haut-Clocher—Sarraltroff line. Reporting the situation to corps headquar-

ters, the division commander voiced opposition to further advances until he could unscramble the units of his sorely tried division.

As can be seen, the moving up of the 15th Division would extend the front held in force by the VIII Corps almost as far as Gosselming. The 15th Division's mission was to open the way for a cavalry crossing of the Sarre, draw the attention of the enemy upon its positions, and assure the successful return of the cavalry. In pursuit of these aims, it was to seek at 0300, 20 August to overpower the German defenders of the barricaded bridges at Gosselming and Oberstinzel (see Figure 3). First Army then hoped that its general offensive could be resumed, pivoting on the Sarrebourg position and driving the enemy toward Phalsbourg. In any case, VIII Corps was to hold Sarrebourg and the hills to the immediate south. The cavalry was to tie its operations in closely with those of VIII Corps, to operate on the flanks and rear of the enemy and scout to the north of Sarraltroff. Dispositions for the XIII and XXI Corps remained as they had been for the previous day, the 19th. However, XIII Corps was to release to VIII Corps all its heavy artillery, which would concentrate in the latter corps all the heavy guns in First Army.

Dubail established his command post on the Rhine-Marne Canal near Xouaxange for the coming day of battle. The forward boundary of the communications zone, established as of 16 August at the Meurthe River, was now advanced northward to Avricourt, Cirey, and Badonviller.

The afternoon of the 19th Joffre made inquiry as to whether Dubail really expected the cavalry to be able to carry out its daring missions beyond the Sarre. He had been entertaining the idea of returning two of Conneau's divisions to the hard-pressed Second Army, but upon Dubail's protestations he decided to leave them in First Army a day longer. And so he advised Castelnau.



Second Army, in explaining its situation to Dubail the afternoon of 19 August, added that it could do no more than hold the *Canal des Houillères*, much less send units eastward across it to the support of First Army.

Thrust at the River

Calling up its regiments from around Xouaxange, the 15th Division during the night struck at the bridges of Oberstinzel and Gosselming, which Dubail wanted taken before daybreak. The 29th Brigade, moving by way of Langatte, was directed on the Gosselming bridge, while the 30th Brigade went by way of Dolving and Haut-Clocher toward Oberstinzel.

The troops arrived, much fatigued, on the high ground around Haut-Clocher and Langatte. Here they halted and prepared to charge their initial objectives at Dolving and Gosselming, which they believed to be enemy-held. It was not until almost 0400 that they resumed their forward movement. By this time the first rays of dawn were visible beyond the Sarre, and the chances of a surprise attack were virtually gone.

On the left the 29th Brigade rushed Gosselming with a bayonet charge. By 0500, master of the place, the brigade began deploying for an attack on St. Jean-de-Bassel, to keep German resistance off balance. On the right the 30th Brigade had the good luck to find elements of the 16th Division in possession of Dolving and holding entrenchments extending down to the bank of the Sarre.

The 30th Brigade, penetrating the Kuhschwanz Woods and the Sarrewald, charged on toward the river. Then, at 0525, Xylander opened up a systematic barrage from the concentrated artillery of the Bavarian I Corps against the French front from the Kuhschwanz to near Eich. The French advance stopped in the smoking woods along the river, forfeiting any remaining chances that the Oberstinzel bridge might be carried.

By 0700 the 15th Division's offensive was clearly over, and some elements were beginning to fall back from the Sarre. On the one side the 29th Brigade, facing a devastating storm of German artillery and machinegun fire, fell back into the woodlands south of Gosselming. The 30th Brigade, its ranks disorganized by enemy firepower, began falling back on Dolving. Still, as these retreats were in progress, the division commander was disposed to believe that the "situation is not serious." Unaware of the magnitude of the 30th Brigade's setback, the division commander was more impressed by the Germans' apparent lack of enthusiasm for advancing outward from Gosselming and St. Jean-de-Bassel. Although this officer had to admit that the German artillery was "somewhat troublesome," he expected momentarily to resume his advance before the morning sun stood much higher.

At Dolving the 15th Division was in liaison with the 32d Brigade of the 16th Division which was holding positions facing Sarraltroff along the skirts of the Sarrewald and Etzelwald.

The 31st Brigade (16th Division), holding the railway line from Sarrebourg to Petit-Eich, was preparing to attack Reding and Eich, supported by the division's artillery. Then, toward 0900 major enemy formations began appearing around Reding, marching on Petit-Eich. The VIII Corps commander hurriedly instructed the involved regiments not to attempt their assault on the hilly ground between Reding and Sarraltroff until such time as the 15th Division should firmly establish itself at the Oberstinzel and Gosselming crossings. At the same time, General de Castelli appealed to Dubail to assure more vigorous action to the right by XIII Corps.

Until 1000 enemy infantry showed little activity. While the 16th Division was only under the threat of attack, the 15th Division, recoiling from its early morning positions, was slowly pursued by an enemy disposed to rely mainly on his artillery.

Before long, however, enemy activity began to rise in fury along the entire VIII Corps front. At approximately 1100 General de Castelli, certain that he could not recover his "equilibrium" short of the Rhine-Marne Canal, ordered the digging in of rearguard positions at Kerprich and along the north skirts of the Rinting Woods to cover the retreat of the 15th Division. Castelli further envisaged that this movement would entail the retreat of the 16th Division, ultimately on Xouaxange.

Just after noon the 16th Division commenced its retreat, pulling its 31st Brigade back on Sarrebourg. After a stout rearguard action, the brigade was obliged to relinquish the city to the Bavarian 1st Division at about 1500 and withdraw to high ground two kilometers to the southwest. It was not until about 2000, incidentally, that the Bavarians were sure that French resistance had ended inside the streets of Sarrebourg. The 32d Brigade attacked frontally, but laboring under unrealistic orders to retreat no farther than the line from Hoff to Haut-Clocher, was carried along in the retreat of the 15th Division.

After conferences with the 15th Division staff, Castelli decided at about 1800 that it was impossible to hold the Kerprich—Rinting Woods line. He then decided that the entire VIII Corps would have to fall back behind the Rhine-Marne Canal, whose crossings it presumably could hold. The 15th Division would take up the new line from Gondrexange to Xouaxange, and the 16th would hold the canal line from the latter point to a mill four kilometers farther east.

Trouble From the Right

In the course of the day's fighting the commander of the 16th Division repeatedly had demanded the stepping-up of XIII Corps activity on his right. On the morning of 20 August this corps had its 25th Division holding outposts along the line from Hesse to Schneckenbusch and just

south of Brouderdorff, its 26th Division concentrated around Brouderdorff and Plain-de-Valsch. Dubail's instructions were that this unit should not move against the enemy except at his specific order. He was expecting, it should be recalled, to employ these troops in a sudden attack against Germans passing along the open terrain in front of them—if the German maneuver should develop. Actually, these units were to find themselves increasingly involved, partly in behalf of the VIII Corps and partly in behalf of the XXI Corps.

Around 0800 General César-Gaston Alix of XIII Corps called for strengthening the outposts of the 25th Division, with a view to supporting the attack of VIII Corps around Reding, and, "in any case, to sustain the right and rear of [VIII] Corps." The 25th was to push a battalion forward to Bühl, already held by elements of the VIII Corps, and it would maintain one brigade east of Xouaxange at the disposal of the corps commander.

About 1000 those forces holding Brouderdorff and Plain-de-Valsch were attacked by the Germans and forced into a grudging withdrawal from those places. Moreover, news coming in from XXI Corps gave rise to fears that the enemy would not stop at outflanking the right of XIII Corps. In the hope of preventing this calamity, General Alix just before 1300 called upon the 26th Division to advance with one of its brigades through Petit-Hartzwiller in the direction of Plain-de-Valsch.

About this same time Dubail, realizing the likely consequences of the 15th Division's setback, instructed XIII Corps to reassemble its troops and move them through Lorquin to hold a line along the south bank of the Rhine-Marne Canal. This was to facilitate the fallback of the VIII Corps.

Executing these movements, Alix instructed the 25th Division to place its 49th Brigade at the disposal of VIII Corps.

However, at the moment the order reached it, at 1410, the 25th Division had put this brigade into the struggle being waged at Schneckbusch by the 50th Brigade against heavy odds. Notwithstanding the fact that Alix canceled the order and left the 49th in the fray at Schneckbusch, the 25th Division abandoned that place to the enemy within half an hour, at 1440.

Meanwhile, Alix received fresh news concerning the situation on the right in XXI Corps, reports indicating an infiltration movement by the Germans toward Walscheid. After ordering the 26th Division at 1355 to suspend its offensive movement and set up a watch on the Biberkirch neighborhood, the XII Corps commander renewed his own offensive order at 1415. The 51st Brigade, charged with this advance, moved forward easily and by 1800 was at the northern corner of Brouderdorff Wood. On the left the 25th Division responded to the urgings of VIII Corps and passed to the offensive toward Bühl. Schneckbusch was regained with what must have been highly effective artillery support, for the German 29th Division reported conducting its withdrawal *unter dem heftigen Granatfeuer*. . . . The 25th pushed one regiment to within two kilometers of Bühl and, although the German official history confutes the claim, one regiment of the division apparently reoccupied Brouderdorff to hold it through the night of 20-21 August (see Figure 4).

Loss of Walscheid

On the right of XIII Corps, the XXI Corps' Colonial Brigade on the morning of 20 August held the heights to the east of Walscheid. The 86th Brigade, held in Army reserve, was concentrated at Abreschwiler. The right flank of the XXI Corps was covered two kilometers southwest of Walscheid by a battalion of the 17th Chasseurs.

The same morning the Colonial Brigade, resuming its attacks of the 19th, advanced on Haarberg, but after 0800 it began en-

countering more and more serious resistance until the enemy, passing to the attack, repulsed the colonials and drove them back through Walscheid. Unable to hang on at Walscheid, the colonials fell back on Voyer under the protection of elements of the 86th Brigade. A counterattack by chasseurs succeeded momentarily in halting the progress of the enemy in the woods west of Walscheid.

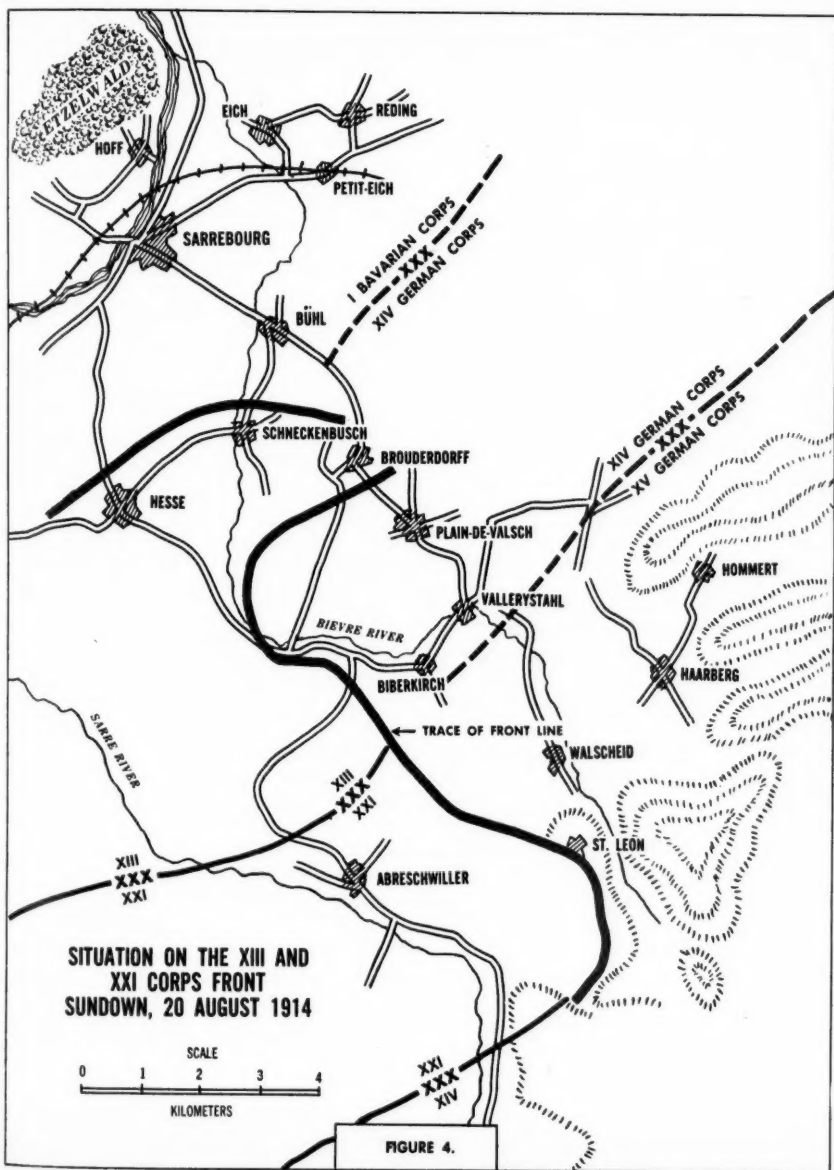
Toward 1500 General Dubail placed the 85th Brigade at the disposal of XXI Corps. This unit then promptly undertook a counterattack with one of its regiments. Taken unawares by the onset of the 85th Brigade's Chasseurs, the Germans beat a hasty retreat. This development enabled General Émile-Edmond Legrand, XXI Corps commander, to reestablish his lines around St. Léon, one and a half kilometers south of Walscheid.

During this action the 86th Brigade, its right uncovered by the retreat of the colonials, its left affected by the recoil of XIII Corps from Plain-de-Valsch and Brouderdorff late in the morning, retired to the edge of the Voyer Woods about a kilometer south of Biberkirch. About 1800 one regiment of the 85th Brigade moved up to reinforce the 86th.

At the close of the day's action the XXI Corps held a line running from St. Léon and skirting the east side of the Voyer Woods where it joined the XIII Corps front (see Figure 4). The 85th Brigade, reinforced by a chasseur battalion from corps reserve, had relieved the 86th and the colonials in the frontline of XXI Corps.

Ominous News From the Left

During the course of the 20th Joffre had been closely following the developments on the First Army front. At about 0600 he had telephoned Dubail to ask if the pre-dawn offensive undertaken by VIII Corps had succeeded, and he also had questioned Dubail carefully as to the use of the cavalry corps. Dubail answered after an hour's investigation that the planned sur-



prise attacks were not successful, and that the cavalry corps could not be freed to operate in open country, as originally hoped, until VIII Corps could somehow secure the Sarre crossings. He added that if this objective were realized, the cavalry was ready to go immediately into action notwithstanding its fatigue; but in case the crossings remained untaken, General Conneau was desirous of a 48-hour respite for his horsemen of the 2d, 6th, and 10th Cavalry Divisions. Joffre, on the other hand, was looking at a sheaf of highly optimistic reports concerning Castelnau's assault farther west in Lorraine, and in view of the possibility that Castelnau's success might enable him to make more profitable use of the cavalry, Joffre forthwith decided to move Conneau back to Second Army to exploit the breaches that Castelnau was presumably opening up in the German lines. After some argument, Joffre agreed to take only the 2d and 10th Divisions away from Dubail.

Toward 0900, before Joffre's decision regarding the cavalry could be made known to him, Dubail ordered Conneau to redeploy his force south of the Rhine-Marne Canal. Consequently, it was not until the 21st that the cavalry corps returned to Second Army control.

During the fighting of the 20th, Dubail was slowly making up his mind that if the present day's fighting did not attain the objectives prescribed the evening before, he would take up the fight anew on the morning of the 21st. If only he could carry the high ground north of Sarrebourg, he could then move his center corps forward to the east of that city. He could very well anticipate that he would have to invest a formidable German strongpoint in the area around Hommarting and Guntzwiler. In advising Joffre of his intentions and assumptions, Dubail drew the chief's attention to the fact that he was contemplating something akin to a siege, that his army had been engaged without rest since 14 August, and that the precarious-

ness of his right flank in the Vosges Mountains did not allow him the necessary liberty to undertake operations clearly offensive in the strategic sense.

When, toward noon, Dubail learned that the 15th Division was falling back, he advised Castelnau of this fact and further informed him that the cavalry corps had been moved back into the area between Blâmont and Avricourt.

It was about 1430 when there came the dread news from Castelnau that his offensive in Lorraine had collapsed. The *offensive à outrance* had withered under the fire of massed German artillery and machineguns, and the battered Second Army was facing an extensive withdrawal. By 1600 the magnitude of the disaster was confirmed in a telegram from Castelnau.

Offensive Washes Out

When at 1700 on the 20th Dubail began preparing orders for the operations of the next day, he assumed that the right of Second Army was around Maizières and Azoudange. So far as his own situation was concerned, it was, as he understood it, reported to Joffre as follows: A line from Kerprich-aux-Bois north of the Rinting Woods and the Woods of Hesse and Voyer to a point three kilometers south of Walscheid. While he hoped to be able to hold this line indefinitely, his troops were exhausted and their ranks thinning. One liaison officer declared that First Army could not even "dream" of resuming the offensive. Sifting the intelligence reports in his possession, Dubail surmised that between the *Canal des Houillères* and the Vosges his army was facing all or part of three German army corps. He was right.

Dubail established his command post at Blâmont on the evening of 20 August. He so little envisaged the eventuality of further retreat that his operational order of 1800 prescribed no change in the forward limits of the communications zone.

During the evening of 20 August the

developments already mentioned as befalling the Army's front caused certain modifications in the dispositions ordered by Dubail. If Castelli felt compelled to withdraw his entire VIII Corps to the south bank of the canal, the local successes of XIII Corps around Walscheid opened up the possibility of attaining positions well in advance of those prescribed in the operational order. At 1930, therefore, Dubail amended the order, saying that "if the corps are holding at nightfall positions more advanced than those indicated in the operations order of this evening, they must hold on to them while keeping in mind the necessity of maintaining contact with neighboring units."

It was about 1830 that Joffre's attention was called by one of his liaison officers with First Army to the need for improved liaison between First and Second Army. At 1950 Joffre telegraphed Castelnau and Dubail that it was "indispensable" for the two armies to organize positions sufficiently strong to arrest the progress of the Germans advancing out of Alsace-Lorraine. He literally scolded his two major subordinates in the east for giving way before a combined force that he estimated to include less than seven corps, while at the same time French forces between Metz and Belfort included the equivalent of at least nine corps. In reality, the German Sixth and Seventh Armies on this front contained the equivalent of eight full corps—none of which had been decimated by heedless assaults on massed artillery and machinegun positions.

At 2100 a new telegram from Joffre informed Dubail that the right corps of Second Army had fallen back, shattered by the German Sixth Army, to a line uncertainly held by its rear guard extending from Maizières westward. Drastic measures were in order to secure the left flank of First Army.

It was about 0030 on the 21st that Joffre's liaison officer with Second Army

telegraphed Dubail's command post to warn of the serious situation developing because of Second Army's bloody repulse. It was very much in order, said the liaison officer, for Dubail to move his rear echelons without delay to the south of the River Meurthe.

At 0340 Dubail instructed Castelli, Alix, and Legrand to get the VIII, XIII, and XXI Corps' supporting units behind the Meurthe "in the least possible time." At 0400 he canceled the operations order of the evening before, announcing that "because of the recoil of the right wing of Second Army, the left wing of the First Army will today repair to the heights of Blâmont." (See Figure 1.) Before dawn the 6th Cavalry rode out from Avricourt seeking to reestablish contact with Second Army's flank.

At 0800 on the 21st Dubail outlined his decision to Joffre with the following remarks: "In order to conform my position to your instructions, and because of the retirement of Second Army, I am going to fall back on the Vezouse River. This I do with great regret, because I would have been able to hold my lines."

Conclusion

Such then is the story of General Dubail's handling of his army during those bloody hours along the Sarre. Let the reader take what lessons he will from the narrative, but the balance of military opinion over the years seems favorable to the quality of Dubail's exercise of command. The commander in chief, who gave many a demonstration of his ability to judge generalship with dreadful severity, never permitted the memory of Dubail's competence and pugnacity to grow dim. Long years afterward Joffre was to write in his *Memoirs* that during the anxious days of August and September 1914, "General Dubail had maintained an unshakable confidence, not once did his morale weaken and he never failed punctually to execute my orders."

TRAINS WITHOUT TRACKS

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THE tangled mass of steel that was a railhead has long since rusted. The tracks, broken as the defending army retreated in the first days after the assault landing and afterward cut a hundred times by guerrillas, run brown and useless between broken bridges and blown-out fills. But the field army—the first in a hundred years to sustain a major campaign without rail support—drives savagely ahead 500 miles from the beaches. Matériel and men to support the advance, disgorged by supply ships along the coast, roll steadily forward to the invading army, carried by trains without tracks.

The offroad train—the train without tracks—is designed to supplement or replace the railroads which may be disrupted hopelessly or not available in theaters of future war. Railroads have provided to all western armies the means of moving men and supplies on a large scale over long distances since the Civil War. The logistics of the modern army require railroad movement capacity and without this capacity the modern army can neither move nor fight. But future war concepts do not include control of ground for its own sake; operations by guerrillas and bypassed enemy forces in rear areas will be normal, particularly in rapid advances. Railroads, among all communications systems, are prime targets for irregular attack. Despite the fact that both the Allies and the Axis repaired damaged track at great speed in World War II, less effort is re-

quired to ruin a railroad than to rebuild it. If the railroads are the essential lifeline of the field army, it will be worth the enemy's trouble to deny the use of rail to United States forces.

In addition, future military operations may be conducted in regions where there are no railroads or where the few existing railroads do not have the capacity to support a major campaign and their use would involve unacceptable risks in canalizing the lines of communication (LOC).

The threatened loss or lack of rail support is a revolutionary change in military logistics. In future war the ground combat force which is best able to replace the rail LOC will have an overwhelming advantage over its opponent. Offroad trains offer an effective alternative to the rail LOC.

Types

The offroad train offers more than the means to handle supply tonnages at railroad rates of movement. Despite the tactical mobility achieved by tracked vehicles and helicopterborne infantry elements, the present field army is bound essentially to road systems. The offroad train can free the field army and its support structure from roads. The offroad train has the capacity in tonnage and in deck space to put the entire field army on wheels.

Several types of offroad trains are in being, under development, or under

The early integration of the offroad train concept into logistical planning and the resultant development of this type equipment will provide the Army with the mobility which is required for future battlefields

consideration. Most spectacular is the all-wheel-powered, giant-wheel logistical carrier introduced initially to provide an effective movement capability on the Greenland Icecap. Other types include trains of nonpowered, giant-wheel trailers, rolling fluid transporter trains, and a variety of special purpose adaptations of the

Command to meet the specifications of the parade designers. As a float platform it was a success on Washington's broad streets. The military significance of the stunt lay in the demonstration that a proper prime mover can haul not just one trailer-load of cargo but many loads. One crew of drivers, under proper conditions,



Standard military trailers towed by two dragon-wagons demonstrate the land train concept in the inaugural parade in Washington, D. C.

all-wheel-powered logistical carrier. The train concept may be applicable also to operation of lighters in over-the-beach cargo handling operations.

During the 1956 inaugural parade the Nation's television viewers saw an assembly of Army trailers supporting a block-long float. This assembly, which was towed by two dragon-wagon prime movers, was put together by the Transportation Training

can do the work of half a dozen crews equipped with standard trucks.

This potential could be turned to advantage in highway operations with standard wheeled cargo vehicles. A train of half a dozen trailers behind a single prime mover could perform a hauling task at a small part of the cost in driver pay, maintenance effort, and procurement costs of the same job performed by individual

trucks. The train would occupy only a fraction of the highway space required for a convoy of separate trucks. The problem of providing very powerful prime movers for such loads could be avoided by equipping each trailer with commercially available power packs, controlled from the lead vehicle.

Servo steering mechanisms could be provided to assure accurate tracking of each trailer. However, although this potential illustrates some of the advantages of vehicular train operations and might be of interest to industrial users, the application of the train concept to highway operations has only passing interest for the Army today. The future Army requires, not better methods of onroad operations, but transportation independent of roads. The need to move great volumes of supplies by vehicular transportation requires independence from the limited movement capacities of road systems and the nuclear capability of the enemy requires avoidance of the canalizing effects of roads.

Equipment must be designed specifically and uniquely for offroad operations. The configurations enforced by domestic highway rules preclude employment of design characteristics which are essential for effective cross-country capabilities. However, vehicles which are not required

to meet highway clearance and domestic axle-load limitations can be given the radical configurations necessary to overcome the obstacles to movement which occur as a normal condition in cross-country operations.

Large size is a fundamental element of effective offroad configuration for logistical vehicles, and the offroad logistical vehicle tends naturally to be a large-capacity item. When vehicles of effective offroad configuration are integrated into trains, a capability for very large volume movement over unprepared terrain is produced. The offroad vehicular train economizes on operating and maintenance personnel, makes full use of the ground without restriction by road capacities and directions, and achieves optimum dispersion of logistic support operations together with the mobility to support dispersed tactical formations freely and easily.

Rolling Transporter

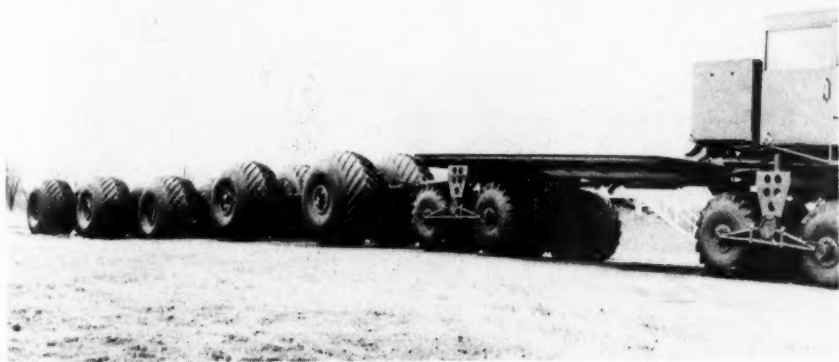
The Rolling Fluid Transporter system illustrates the offroad train concept in a critically important phase of support. The 1,000-gallon Transporter consists of two 42 by 60 inch treaded rubber bags, within which petroleum, oil, and lubricants (POL) is carried. The two bags are joined by an axle and towbar, the assembly being equipped with brakes and filling and emptying fittings. The twin-bag assemblies may be towed individually or in serials up to the towing capacity of the prime mover. A 2½-ton truck can tow 10 transporters, or 10,000 gallons of POL, in addition to its on-vehicle cargo load, on a highway, and three transporters off the road. A D8 tractor can tow as many as 20 transporters off the road. The transporter will go anywhere its prime mover will travel. This mobility allows half or more of the field army's support tonnage to be taken off the roads, reducing congestion and the vulnerability of the road nets to enemy attack and blocking.

The use of transporters in trains al-

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lows POL to be moved in large quantities with fewer men and less motive power than conventional systems require. The mobility of the transporter permits POL to be handled in bulk in the most forward areas, freeing support and using agencies of the drum and jerrican handling problem and thus achieving significant manpower economies throughout the POL supply line. The transporter permits POL to be delivered across country to combat ele-

tors, are contemplated. To provide long haul movement capabilities comparable with rail operations, offroad trains on which all wheels are powered are being developed. The large-wheel configuration has been adopted for both nonpowered and powered offroad equipment at this time. Other configurations which may offer advantages in the form of still lower ground pressure, increased mobility, and reduced dimensions may be found desir-



Rolling Fluid Transporters in train

ments in dispersed locations and to be delivered to forces in the advance wherever they may be.

Offroad trains of other types provide equal efficiency in handling the balance of the supply requirements of the field army. Two different offroad train systems are under development at the present time to meet the offroad movement requirements of the future battlefield. For relatively short hauls, where the loading and unloading time is high in proportion to the movement time, trains of nonpowered offroad trailers, to be towed by cross-country trac-

able and feasible in the course of further development.

Trailers

Nonpowered trailers were developed initially as a replacement for ski-equipped heavy cargo sleds in permanently snow-covered polar environments. The trailer now being standardized consists essentially of a 10 by 12 foot cargo platform mounted without suspension on 33½ by 60 inch tires, and carries the load of a 10-ton cargo sled with significantly less motion resistance. The 10-foot diameter tires afford good mobility on deep snow and, in

addition, provide excellent mobility in other unprepared terrain. A wide variety of prime movers can be employed, according to the requirements of the environment, to tow trains of offroad trailers.

A *D8* tractor can haul seven or eight trailers, each carrying a 10-ton load, on snow. A wheeled construction tractor is able to tow from three to five trailers on firm ground. The *M85* Ordnance cargo

The all-wheel-powered offroad train has still greater capabilities. It consists of one or more power generating and control cars and from six to 10 cargo cars, each rated from 15 to 25 tons capacity. The power car generates electrical power required to drive the motor at each wheel of the train. A train consisting of a control car, 10 cargo cars, and a power car may be nearly 200 yards long, and may be



Sno-Train

tractor may be expected to tow five or more trailers across country in the temperate zone. For the cost of operating and maintaining a single powered vehicle in any environment likely to be encountered in military operations, the cargo lift of a dozen 5-ton trucks can be equaled. In contrast with conventional military trucks, the offroad trailer train will move with complete independence of roads, following the combat forces closely and with great flexibility.

equated in capability roughly with a light truck company. The all-wheel-powered offroad train, not limited by the capabilities of a prime mover, will travel flexibly over long distances, resulting in a self-sufficient transportation system matched in capacity only by railroads.

Increased Mobility

The offroad train not only can supplement or replace railroads, but can conform its movements to those of the combat ele-

ments, thus freeing the fighting forces from limitations in deployment based on fixed rail and road systems.

The combination of very large capacity and mobility equal to that of the combat elements of the field army allows the off-road train to form the base for mobilization of much, if not most, of the support structure of the field army and important

port for considerable periods of employment. It could deploy over wide areas on order, independent of roads. It would provide a capability to deliver promptly and with greater mobility a large volume of firepower with less men and equipment than any other system.

The complete headquarters of major units may be mounted on trains, with



Pneumatic roller cargo train

elements of the combat power of the division and larger formations.

With the growing importance of rockets and missiles in the fire support plan, the offroad train provides a means for making rocket and missile batteries highly maneuverable and flexible. Not only the weapons but their fire control elements, communications, maintenance facilities, personnel housing, unit supply, and all related facilities may be mounted on one or more trains. The fire support train would be substantially free of LOC sup-

quarters, mess, communications, office space, headquarters supply, and all other operational and administrative elements able to move instantly wherever the conduct of battle may require. Elements of the headquarters may be dispersed, if necessary, by providing the capability for individual cars to move independently for short distances. Critical elements of the command post (CP) may be armored without exceeding the capacity of the equipment or retarding its mobility. Command trains would reduce the labor required to

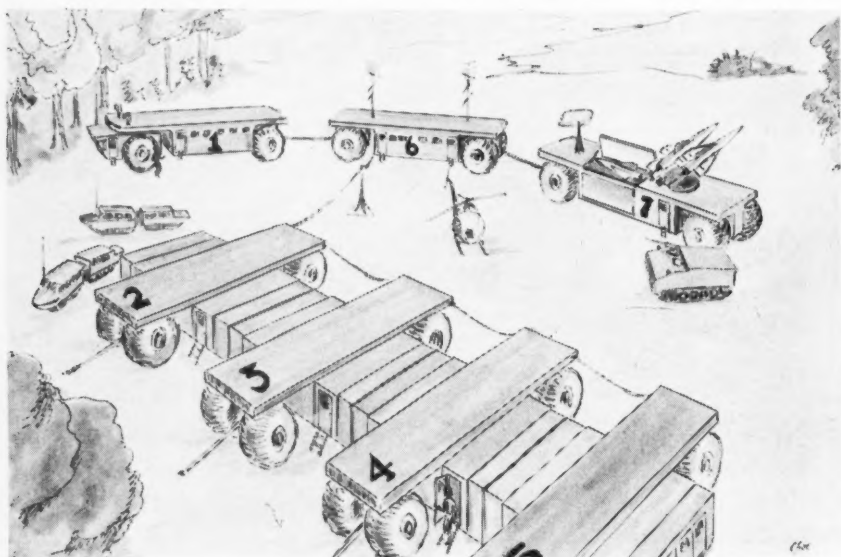
establish and displace CP's, provide optimum operating conditions for equipment and personnel, provide the space and carrying capability for an ever-wider variety of increasingly sophisticated control equipment, and permit commanders to follow the battle closely and influence it with maximum effectiveness.

Maintenance shops up to the rebuild level, supply points, and small general depots may be mounted on offroad trains,

army moves forward and which, once established, tends to fix the army on its established axis in its present zone of operations.

Ammunition depots may be mounted on offroad trains or nonpowered offroad trailers, and supplies may be moved forward to the fighting elements with minimum handling and maximum flexibility and speed.

In the movement of troops, personnel



The Army Operations Center (TAOC) mounted in an offroad train

Car 1 provides motive power for the entire train during movement, and electrical power for operation of the facility.

Cars 2, 3, 4, and 5 are hydraulically-expanded office vans, providing a total of 3,000 square feet of floor space.

thus permitting a large part of the communications zone to be mobile. The resulting capability of the support structure to move forward with the field army would eliminate the present need for establishment of a pyramidal structure of fixed support installations which grows as the

Car 6 provides communications for the facility.

Car 7 provides local air defense for TAOC.

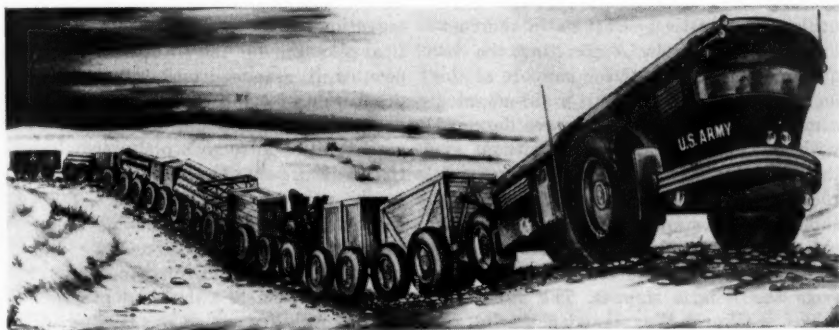
A similar train provides quarters, mess, and facility supply for TAOC personnel.

trains may be invaluable in bringing units and replacements forward along the LOC. A 10-car train might carry 500 men with their personal equipment. In the battle area armored personnel trains of various capacities can provide the means for rapid deployment of reserves.

Other Uses

The offroad train may offer a means of satisfying the frequently stated requirement for a vehicle which can serve as a fighting platform, particularly in exploitation through battle zones contaminated with nuclear weapons. The battle train may be an armored train, carrying a reinforced rifle company, great firepower in guns and rockets, large reserves of ammunition and fuel, reconnaissance helicopters or individual lift devices, and possibly even light ground vehicles. In exploitation the battle train might be accompanied by

landing (VTOL) and short takeoff and landing (STOL) ambulance aircraft which would exceed the foreseeable capabilities of the field army and which would interfere with post-strike defensive or offensive combat operations. A hospital mounted on an offroad train would be able to move promptly to and operate in the casualty area without loss of time for establishing facilities. It would be able to screen casualties rapidly, returning to duty personnel with minor injuries, providing prompt bed care for serious injuries, and providing emergency treatment at the earliest



Artist's concept of the US Army nuclear-powered overland carrier

a screen of reconnaissance vehicles and light tanks, and the resulting task force would have the operational characteristics on land of a cruiser-destroyer force on the seas.

The potential for mounting field hospitals on offroad trains is particularly promising. The handling of mass casualties in nuclear warfare will require increased hospital capacity and prompt response to battlefield requirements. The time required to move hospitals of present types to areas adjacent to contaminated casualty areas would be too long to meet the requirements for prompt care of casualties. Removal of mass casualties from the battlefield to hospital areas behind the frontlines would demand a quantity of ground ambulances or vertical takeoff and

possible time. Prompt screening of minor injuries to permit return of personnel to duty would contribute to maintaining maximum post-strike strength to resist enemy exploitation. Timely and effective treatment of serious and emergency casualties would assure maximum recovery rate.

The offroad train hospital would be completely self-sustaining, with all facilities, equipment, supplies, and power required for extended operations. Permanent living quarters for hospital operating personnel would be included. The train would be provided with sufficient shielding to enable it to move directly into contaminated areas and operate for useful periods of time in such areas. Some cars would be constructed with expansible characteristics to provide maximum sheltered space for receiving

and processing casualties. The facilities provided for the field hospital on the off-road train would be much superior to facilities now provided, and the operation of the train-mounted hospital would be more effective and would require fewer personnel than present field hospitals.

Nuclear Power

In the middle future, nuclear power offers the means of securing still greater effectiveness from offroad train applications to support of the field army. The nuclear-powered offroad train will eliminate the need for a large part of the POL utilized in logistic operations in the combat theater and, by eliminating the requirement for an LOC for support of the logistic system, will permit train-mounted combat support depots to move forward with the field army advance without establishing an LOC. Nuclear-powered offroad trains will provide the field army a capability to conduct sustained exploitation which it has not possessed since Tamerlane's cavalry swept across Russia from the Asiatic steppes. The sight, familiar in World War II, of powerful armored penetrations bogging down because they have outrun their fuel and ammuni-

tion supply systems would disappear from United States Army battlefields.

Conclusion

A prototype all-wheel-powered offroad train and two nonpowered offroad trailer trains are being employed on an Army operational mission. Additional offroad trains will be available for experimental operations in the near future and will be used for operational tasks where their unique capabilities are essential. Rolling Fluid Transporters will be available for support of military operations and for field experiments within a year. The integration of the train concept into logistical planning for the future Army should not await standardization and quantity production of equipment, but should begin now at all levels. Sound analysis of train potentialities in today's planning is essential to assure that the equipment produced in the next two or three years will suit the needs of the field army in the most effective and efficient manner.

Properly employed, offroad trains will provide to the field army the logistical and tactical mobility which is essential to exploit to the full the powerful, flexible, and nuclear combat capability of the army.

The Army is convinced that it must avoid detection in order to survive in nuclear warfare. Thus mobility provides the key to survival on the battlefield. This applies not only to combat type units but also to logistical support units. The Army already has in its structure the mobile supply, maintenance, communication, survey, medical, and engineer units which are essential for the support of widely dispersed, fast-moving, missile operations. This constitutes a complete logistical-system-on-wheels and is a 'must' for missile operations in the nuclear age.

Secretary of the Army Wilber M. Brucker

CAN WE LIMIT NUCLEAR WAR?

R. N. Rosecrance

IT MAY have been true that the strategy of "massive retaliation" was to the special advantage of the United States relative to the Soviet Union when it was announced in January 1954. If we could reach into the very heart of Russia while still preserving our basic strategic capacity against Soviet attack, all-out war would be more dangerous for the Russians than for us, and the threat to wage all-out war would become a weapon in our favor. But if this were true in 1954, it is no longer. Now we do not possess a decisive advantage in the field of unlimited weapons and delivery systems; if we can destroy the Soviet Union, she can very probably also destroy us.

The recognition that "massive retaliation" has now become a double-edged sword has occasioned a new "great debate." The question is whether we should place greater emphasis upon limited war strategies than we are presently doing. The major argument in favor of greater preparation for limited wars is that if we do not develop our limited capabilities, an aggressive power could confront us with an almost impossible choice. If we have no shield except the absolute weapon, we may have difficulty responding to a limited aggression with a strategy other than all-out war or all-out surrender.

At each stage of the enemy's advance we will ask ourselves whether the territory absorbed is worth the risk of total war; in each case we may postpone a decision, waiting for a less ambiguous challenge. If, on the other hand, we mount the

ability to resist with limited means, we may possibly avoid the choice between Armageddon and surrender; we have a chance to counter the limited aggression of the enemy by the limited retaliation of a defensive coalition.

The advocates of limited war have a cogent argument. Without prejudice to the manifest need to strengthen and protect our capacity to wage all-out war, we must recognize that total reliance upon weapons of mass destruction may ill serve our purposes. But even with the inclusion of "limited war" in our strategic doctrines, there is the additional problem of the type of limited war strategy to be included. Some proponents stress the need for a diversified military establishment permitting three separate strategies: limited conventional war, limited nuclear war, and all-out war. Others argue that we should place primary reliance upon limited and unlimited nuclear war, meeting even conventional attacks with tactical nuclear weapons. Despite the currency of this second opinion, there are good reasons for a reexamination of the strategy of conventional war. Limited nuclear war may have more serious disadvantages than it was at first thought.

Limited Nuclear War

There are many strong supporters for a current thesis that future wars will be nuclear wars, either all-out or limited, and that the war which starts out with the limited use of nuclears is easier to keep limited. The case they make is strong and

Although the case is not conclusive, it appears that limited nuclear war may have more serious disadvantages and poses a greater danger of expanding into an all-out conflict than does conventional war

not without appeal and the arguments in favor of a limited nuclear strategy are numerous and impressive. Here is how they reason.

Perhaps the most basic contention of those who support such a strategy is that it provides an alternative between conventional war and all-out war which takes the best from each strategic situation. On one count, limited nuclear war holds a greater threat for possible aggressors than a merely conventional strategy. The merit of "massive retaliation" was its frightening potency; if all-out war would follow upon the slightest aggressive venture, the aggressor would reflect long before making an advance. Conversely, if limited nuclear war provides a greater "deterrent" than conventional war, it still does not inhibit action. Nations, it is held, will not hesitate to wage limited nuclear war when limited challenges arise. In this fashion it steers a midcourse between opposing evils: it poses a greater threat than conventional war, and a greater incentive to action than all-out war.

A second argument advanced by those who favor "limited" nuclear war is that in all probability it can be limited. The tactics of a limited nuclear war in the future will be such as to minimize destruction. Airfields probably will not be attacked; cities, unless near the centers of troop concentration, will not need to be destroyed. The object of war will be the destruction of opposed armed units; for this purpose absolute command of the air will neither be possible nor necessary. With the advent of missiles and vertical takeoff aircraft, it is contended, it will

be as economical to destroy the enemy's aerial strength in the air as on the ground. In addition, there will be little need to use large numbers of tactical nuclear weapons upon ground troops. Units will be highly mobile, dispersed, and self-sufficient; the enemy will try to avoid concentrating his forces and thereby presenting a target for massive firepower. Such bombs as are dropped will be aimed at small troop concentrations.

The case for ready limitation of nuclear war does not rest only on its limited destructiveness. It is maintained that limited nuclear war can be as easily confined as conventional war. While it is theoretically possible for the aggressor to raise the nuclear ante by responding with 150 kiloton bombs to the defender's 100 kiloton weapons, he may hesitate to let the conflict broaden in scope and destruction. Each nation retains the power to retaliate with unlimited weapons, and each time the nuclear stake is increased the likelihood of a thermonuclear response also is enhanced. In such a war, therefore, it will be in the interest of the relative winner to refrain from pressing his luck too far; the gains won in limited war could be quickly canceled with a broadening of the conflict. The proponents of limited nuclear war also argue that the relative loser will hesitate to accept all-out war because his forces would be more subject to weapons of great destructiveness than those of his adversary.

Another argument advanced in behalf of limited nuclear war is that it may even be easier to limit than conventional war. If a war begins with strictly conventional weapons, both parties may raise it one step without calling forth all-out retaliation. But the very fact that conventional war is not just a step away from all-out war introduces an element of uncertainty which could lead directly to it. If armies are engaged in conventional war, and one adversary suddenly chooses limited nuclear weapons, his opponent may be uncertain

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whether the war is now to be fought as another form of limited war or as all-out war. To protect himself he may have to assume the worst.

*The fact that there exists a clear cut-off point between conventional and nuclear war may turn into a double-edged sword: the existence of two families of weapons may serve to limit the war as long as the limitation holds. Once breached, however, it may set off a vicious spiral, difficult to control.*¹

The advantage of limited nuclear war, it is held, is that it is always closer to unlimited conflict than conventional war. Because the choice is not between two different forms of limited war but between limited war and all-out war, both parties will redouble their efforts to avoid an expansion of the conflict.

It is also maintained that a strategy of limited nuclear war is peculiarly suited to our own capabilities and unsuited to those of probable adversaries. Our Defense Establishment is planned on the assumption that nuclear weapons will be used; to adopt a different strategy would give the advantage to our enemies. We have a broader technology and more adaptable way of life than our probable enemies, and limited nuclear war places a premium on these qualities. It requires competence not only in weapons systems, but in those technical fields which permit the development of highly mobile forces capable of subsisting for long periods without direct communication with supply centers. Thus the capacity to wage limited nuclear war depends upon a diversified industrial plant. Our likely antagonists, the Soviet Union and China, are deficient in these respects. The Russians have shown that by concentrating upon one production item their technology can produce excellent results. It is questionable, however, if they can maintain the diversified industrial effort on which limited nuclear war would depend.

It is not in technical and industrial competence alone that the Soviets are deficient. Limited nuclear war will require a flexible strategy, leaving a great deal of leeway to commanders in the field. As their operations in World War II demonstrate, the Russians have never been able to master such a strategy. Their attacks were coordinated from headquarters far behind the lines. Commanders at the front had little or no role in planning operations or in changing plans to meet military exigencies in the field. On both grounds, it is maintained, we should have an advantage over the Russians. It is not surprising that they have persistently reiterated two themes: limited nuclear war is impossible and the atomic bomb should be "banned."

Finally, the proponents of limited nuclear war contend that it is impractical to develop forces possessing both conventional and nuclear capability. Dual purpose forces will find it exceedingly difficult to switch from conventional to limited nuclear war on the opponent's initiative. During the conventional phase of their military activity these forces will be highly vulnerable to nuclear attacks because of their approximation to a continuous line formation.

*The side which cedes the first nuclear blow to its opponent compounds the traditional disadvantage of the defensive with a deployment disastrous in nuclear war. The side which has the initiative, on the other hand, can disperse its formations before resorting to nuclear weapons. It will, therefore, be much less vulnerable to retaliation by its opponent.*²

The conclusion reached is that emphasis upon a limited nuclear strategy will best serve our interests.

Analysis

It is impossible, with our present state of knowledge, to give a thoroughgoing refutation of the views of the proponents

¹ Henry A. Kissinger, *Nuclear Weapons and Foreign Policy*, Harper & Brothers, New York, p. 193.

² *Ibid.*, p. 182.

of limited nuclear war. We do not yet know enough about various limited war doctrines to be sure that one is preferable to another. We cannot be certain which is most capable of limitation; we are not positive which will redound most to our own interests and to the detriment of those of our probable antagonists. There seems reason to believe, however, that the claims of limited nuclear war have been overstated and that a reexamination of conventional war is appropriate and needed.

The arguments for limited war are persuasive, but they are not wholly consistent. Two of the most basic contentions in favor of a limited nuclear strategy are that nuclear war can be more easily limited than conventional war and that nuclear war poses a greater military threat to aggressors than conventional war. It would seem difficult, however, to support the two contentions simultaneously. As the exponents of limited nuclear war use the terms, the greatest military threat is posed by thermonuclear war; and the military threat of either strategy would seem to vary directly with its tendency to bring on all-out war. If a nuclear strategy involves a more formidable military danger, it is by virtue of the fact that it is more likely to develop into a thermonuclear holocaust. If it is less likely to lead to an all-out war than a conventional struggle, conventional war must carry the greater threat.

This line of reasoning would lead to the conclusion that we must either place primary emphasis upon the need to limit conflicts or upon the need to pose a maximum military threat. If this argument were to be accepted, we should have to admit that "deterrence" and "limitation" cannot coexist. There is, however, no need to equate "deterrence" or "maximum threat" with the threat of all-out war. A state will be "deterred" from attacking a neighbor if it is certain that it could not win the ensuing war, or, if it could win, that it could not do so at an acceptable

cost. This could even suggest that there may be circumstances in which a state would be deterred from beginning a limited war and yet find thermonuclear war to its advantage.

Factors

More interesting is the contention that limited nuclear war is more likely to remain limited than conventional war. This argument depends upon an analysis of the factors which affect limitation and the respective strategies to be employed. For present purposes these may be classified into five groups.

First, a war of major destruction will be much less likely to remain limited than one in which slight destruction is inflicted. The reason for this is that as a conflict deepens in ferocity, as its toll in human and material terms rises, there will be a growing readiness on both sides to launch the absolute weapon. The more destructive the conflict, the less disadvantageous does all-out war become.

Second, whether war can be limited or not depends upon the type of targets involved. If the targets include great cities and important airfields, the enemy will be more willing to launch all-out war. Much of the present hesitancy to wage unlimited war reflects the attitude of great urban populations which fear the hydrogen bomb. If the course of war brings mass destruction to large urban areas, these populations will be more ready to accept all-out war against the enemy. If important airfields are brought under fire, there will be a more willing acceptance of the risks of thermonuclear war. Attacks on airfields may be viewed as attacks on strategic airpower or as attempts to gain control of the air; neither could be accepted without great threat to retaliatory capacity.

Third, the ability to limit war relates to the extent of the area involved and its geographical location. A war engulfing a large area would be more likely to lead

to unlimited conflict than one in a straitly limited area. Also, for example, a war in West-Central Europe undoubtedly would be much harder to contain than one on the border of Pakistan.

Fourth, a war which brought the forces of the major antagonists, the US and the Soviet Union, into direct conflict with each other would be harder to limit than one which involved the use of satellite armies against the Western Powers.

Fifth, the limitation of war depends upon the respective resolves of the protagonists. If both are eager to keep out of an all-out war, such a war may be prevented. On the other hand, if one or both of the combatants is more or less indifferent to the choice between limited and unlimited war, the latter will be the more likely to occur. It should be noted that the respective attitudes toward limitation will vary with the course and conduct of the war.

Comparison

How do limited conventional and limited nuclear war compare against these criteria? On the first count, it seems that limited nuclear war will be far more destructive than its proponents have thought. Recent exercises indicate that the toll in human life exacted by a limited nuclear war would be very substantial. According to some sources, hypothetical "hits" on field units have involved casualties up to 40 percent for the unit involved; entire battalions were knocked out of action. The use of tactical nuclear weapons against army formations meant that fully organized battalions had to move in to replace disabled units. Although figures were not given indicating impact on local populations, it must be assumed that the "scores or hundreds" of nuclear explosives employed would have taken a sizable toll among noncombatants. In fact, it is reasonable to speculate that relatively large numbers of nuclear weapons will be used within a short space of time in a future limited nuclear conflict. Ground forma-

tions evidently have proved a more inviting and vulnerable target than had been assumed previously.

It seems probable, on the other hand, that limited conventional war will not be so destructive. For the immediate future tactics of limited conventional war will be similar to those of limited nuclear war, given the important difference occasioned by less potent firepower. In the years to come the tactics of both types of war would seem to envisage highly mobile units possessing potent firepower and an increasing trend away from the fixed line formation. The object of both strategies apparently would be to force the enemy to concentrate a force large enough to be susceptible to attack by conventional or nuclear firepower, or alternatively, to require him to disperse his forces so completely as to lose control of territory. In either case the destructiveness of war would be circumscribed by the less potent firepower of conventional weapons.

On the second count, limited nuclear war would seem to be little better than a conventional strategy. Neither strategic conception would aim at the destruction of great cities and strategic airfields. Absolute, as differentiated from local command of the air, could be attained only by risking all-out war, and mass attacks on great urban centers could serve to make all-out war acceptable to the enemy population. It would seem, however, that if such targets are involved in the battle area, a conventional strategy would afford a better safeguard against all-out war than tactical nuclear weapons. Use of conventional weapons against such targets might possibly pass muster as enhanced limited war; use of nuclear weapons, on the other hand, would introduce a sliding scale of weaponry, the end point of which would be thermonuclear war.

Third, limited nuclear war has no apparent advantage over conventional war. The greater mobility of both conventional and nuclear forces in the future suggests

a wider battle area. There is, however, no reason to believe that the conventional will be any larger than the nuclear battlefield.

On the fourth count, it may well develop that conventional war would be safer than limited nuclear war. A conventional war could be fought between Russian satellites and the West, but use of nuclear weapons against a Communist state would make Russian involvement very likely.

Finally, it is far from clear that the combatants in nuclear war will try harder to avoid all-out war than those involved with conventional means. Indeed, the arguments of the advocates of limited nuclear war on this point smack rather of "brinkmanship." These theorists contend that the nations fighting a limited nuclear war will be more resolute against an expansion of the conflict than nations involved in conventional war. In other words, the closer nations are to the brink of Armageddon, the harder they will try to avoid going over it; the safest place, it is almost suggested, is the very edge of the chasm. But it is difficult to believe that states involved in conventional strife will be less aware of the dangers of unlimited conflict than those fighting a limited nuclear war. The fact that they chose conventional instead of all-out war would seem to be ample proof of their desire to avoid a broadening of the conflict. Nor is it clear that if a conventional war were suddenly transformed into a limited nuclear war, the ensuing uncertainty would make for an all-out struggle.

Nations prepared to wage limited conventional war will have a thorough understanding of the different limited war strategies that may be employed. Certainly, they will need the doctrine and the capability to wage both conventional and nuclear war. Given this understanding (and even an exclusive limited nuclear war strategy could not be adopted without it) there seems little reason to suppose that a shifting of strategic gears need

lead to breakdown. It may be true that nations engaged in a limited nuclear struggle will be more careful to avoid all-out war than will nations engaged conventionally to avoid limited nuclear war; a broadening in the first case may be less acceptable than a widened conflict in the second. It would not follow, however, that conventional contestants will be less resolute against all-out war than limited nuclear contestants. Assuming equal resolve of the antagonists to start with, the conflict which will go over the edge first is the one which is nearer to it.

Additional Considerations

There are other than purely military reasons for choosing among various limited war strategies. Future even more than past wars will be fought to attain political objectives. The avoidance of all-out war and the "all-out victory" associated with it indicates that exclusively military objectives may no longer be all-determining. Limited aggressions have been undertaken not merely to gain territory, but to stabilize coalitions and to weaken opposing groups. Limited resistance to aggression has been undertaken not merely to restore the military *status quo ante*, but also to gain adherents and to strengthen an alliance system. Russian intervention in Hungary not only posed a threat to the further development of national communism in Eastern Europe, it also tested the resolve of the Atlantic Alliance. The Taiwan crisis seems to indicate a very sophisticated awareness on the part both of the Chinese Communists and ourselves of the type of military measures which allies and uncommitted states will accept.

Considering the political character of war, it may well be that limited nuclear war is not a universally applicable strategy. In the Taiwan situation thus far, nuclears have played no part. In various other hypothetical situations, moreover, it is questionable that tactical nuclear weap-

ons would provide a satisfactory means of repelling aggression. Suppose that the Sino-Burmese boundary controversy were renewed and large areas of North Burma occupied by the Communists. Limited nuclear war might be feasible militarily, but it would impose an enormous strain upon our political acceptability in Asia. If a powerful military revolt occurred in East Germany and West Germany were drawn in, would we be ready to wage limited nuclear war in support of the insurgents? Entirely aside from the military problems involved, it is well to remember that if we are to be regarded as a kind of policeman to guard against Communist burglary, we will have to use weapons which are congenial to those who are being robbed or our services will never be requested.

There is a special reason for local opposition to the use of nuclear weapons in the event of limited aggression. For the local inhabitants, the choice of weapons affects not only military but civilian populations; while only our soldiers would be involved, the host country would risk total devastation of its human and material resources. The desire to avoid weapons of great potency must be greater in the latter case. It is not surprising, for example, that another "great debate" raged last spring in West Germany over nuclear weapons. While Dr. Adenauer and the *Bundestag* majority favored equipping German forces with tactical nuclear arms and approved *Nike* sites, the German people opposed missile bases and nuclear defense.

A recent poll indicated that 73 percent of those questioned opposed establishment of ballistic missile sites and the arming of the *Bundeswehr* with nuclear weapons; previous surveys have shown that a strong majority are against use of nuclear weapons in Germany's defense unless the Russians initiate their employment. Since the result of limited war will depend in part upon the organized support of the host

population, it will be well to make sure that the strategy we use does not inhibit local cooperation and aid.

The final issue is one of practicality: "Is limited nuclear war more to our advantage relative to the Russians than limited conventional war?" The traditional view of American and Soviet capabilities in the limited war field has given the edge to the Soviets in conventional weapons and to ourselves in tactical nuclear devices. The immense superiority of the 150 or more Soviet divisions, abetted by the 80 satellite divisions, it is held, can never be countered without the employment of nuclear arms. We have a preponderant advantage in the tactical nuclear field, it is argued, and we should use this advantage to neutralize the Soviet reservoir of ground troops.

If this assessment was a reasonable presentation of the case based on the knowledge available to us in 1957, it is considerably muddled by more recent developments. It seems now that limited nuclear war is not an infallible antidote to ground troops. The evidence seems to suggest that the potency of tactical nuclears is so great that the advantage may fall to the side which has the greatest number of replacement battalions. If this is true, the assumed American advantage in the tactical nuclear field may have been wiped away. Perhaps a reconsideration of the Korean strategy which permitted us to neutralize armies two to four times our number by greater conventional firepower is in point.

Objectives

Our aim should be to develop a strategy in which our inferiority in numbers can be compensated for by superior firepower. The appropriate strategy from the American point of view would be one in which firepower is used to neutralize but not to obliterate; in this instance the result will depend on firepower more than ground forces. It is difficult at this juncture to identify a strategy which will conform

perfectly with this requirement, but it is doubtful that limited nuclear war is an entirely satisfactory answer.

There are other reasons for believing that our vaunted edge in tactical nuclear weapons is more or less ephemeral. The Russians have been making strides in the limited nuclear field and the military review in Moscow in November 1957 demonstrated a not inconsiderable capability. Further, the suspension of nuclear tests after a series of exercises with small nuclear devices probably indicates that the Soviets are further along in the limited nuclear realm than we believed.

Of course, it does not follow that if we do not have an advantage in tactical nuclear war we must necessarily have an edge in conventional war. Yet it may be that we are not at quite so large a disadvantage as is often portrayed. Because of the limited firepower of conventional weapons, there may be no such thing as "conventional plenty" corresponding to "nuclear plenty." In a limited conventional war no nation may be sure that it has more than the quantity of munitions needed before the conflict begins. If this is true, the outcome of the conflict probably will be affected by an immense productive effort on both sides. In terms of sheer productive capacity, we are superior to the Soviets, and it would seem that this could at least partly counteract the Soviet preponderance in ground forces.

Nor would it necessarily follow that limited nuclear war would place a special premium upon American initiative and resourcefulness while the Soviet's rigid centralization would make it vulnerable. It may be that initiative and independent action will be disadvantageous in a limited nuclear war, despite the claims of its proponents. The major problems seem not to be how to give greater initiative and decision to commanders in the field, but how to control operations of the war from a central headquarters. Commentators have suggested that a limited nuclear

war would lead to such disorganization and chaos that it could not be controlled at all. There is need for greater development of communications networks and greater coordination of the tactics of individual units in such a war. In this effort we are not likely to have an advantage over the Russians.

Finally, it is necessary to ask whether it is possible to adopt a strategy of limited conventional war and still be prepared for limited nuclear war, should it occur. Advocates of limited nuclear war stress that although forces capable of waging either limited nuclear or conventional war can be developed, the strategies of the two types of war are so different that the shift from one to the other would be impossible to effect without great loss to the defensive forces. This is primarily because they conceive of conventional war in terms of World War II, and nuclear war in terms of dispersed formations and great mobility. It would seem, however, that tactical innovations in both types of war will proceed along parallel lines. Moreover, it is suggested that when tactical nuclear weapons are introduced, they can exact an impressive toll even against forces which are prepared for them. If nuclears put the defense at a disadvantage, it is a disadvantage to which the offense is not immune. It is possible that the defense can recoup the initiative by powerful nuclear strikes on the enemy's ground forces together with the commitment of new ground forces.

The balance of informed opinion seems to lie in favor of dual purpose forces; they are currently being maintained in NATO and the pentomic division is capable of fighting either with or without nuclear warheads. Current NATO doctrine is to employ limited conventional war where "brush fire" aggressions occur; yet preparation is being made to wage a limited nuclear war against a more formidable but still limited military attack.

Conclusion

Two conceptions of limited war have been reviewed briefly. One conception emphasizes the employment of limited nuclear war in all, or almost all, limited conflicts. The other stresses the development of balanced capabilities for limited conventional, limited nuclear, and all-out war. This conception reflects a prevailing uncertainty about tactics of limited war; we do not know for certain which strategy is most likely to remain limited, and we cannot be absolutely sure that tactical nuclear war is to our advantage relative to the Soviet Union. Because of this uncertainty, it is better to be ready to fight different kinds of limited war than to put all our strategic eggs in one basket. Our present knowledge seems to indicate in particular that total reliance upon tactical nuclear weapons as a limited war strategy may not wholly serve our interests.

Of course, the second strategic conception is the more expensive; it is more costly to prepare for three kinds of war than for two. But if estimates are correct, limited conventional war may not require much more manpower than limited nuclear war; in either case it would seem that a military establishment of 2,500,000 men is insufficient for the purposes at hand. If we are to be prepared to wage various types of limited wars, we must be ready to spend considerably more than we are

now spending on defense. Some have said that the attempt to prepare for the small war would induce national bankruptcy and give the Russians the advantage. Actually, in terms of sheer military spending, we have the advantage. If we are forced to compete to develop a balanced military capability, Russia will go "bankrupt" before we do. And in a limited war of attrition we again would have the advantage; for in a war of attrition, the outcome would depend upon the respective productive resources of the contending nations.

The inclusion of a strategy of limited conventional war among our military doctrines will not solve all problems. However, it will permit us to consider requests for military support more seriously than in the recent past, even if it will not always allow us to act. Conventional capability did not spell the difference between intervention and abstention in the Hungarian revolt, nor would it necessarily enable us to respond to an appeal by East German insurgents. Yet it is true that the more obviously our strategy is keyed to limited conventional war, the greater the number of potential conflicts in which it may be used. If "massive retaliation" paralyzes the will, conventional war liberates it. It is, moreover, a form of war which is presently acceptable in almost all countries as a means of resistance to aggression.

We must overcome any impression that we are a country which can respond with a big bomb and little else. Although we have significant assets now to cope with limited wars, these can and must be improved so that it can be made crystal clear to both our friends and foes that we can respond promptly with proper weapons and proper forces to any challenge. It is the goal of the Army to develop its strength so that it may play its indispensable part as a member of our tridimensional team in presenting this flexible military capability to the world.

General Maxwell D. Taylor

Using Our Nuclear Weapons

Major DeBow Freed, *Infantry*

Student, U. S. Army Command and General Staff College

TACTICS and procedures to use the nuclear weapons we now possess are not keeping pace with the technological advances being made in this field. Too often our planning and operational procedures for the employment of nuclear weapons are based on the assumption that all needed time will be available. However, few of the targets to be engaged with small-yield weapons will remain in one place long enough to accomplish this slow and deliberate planning and coordination.

Studies of World War II operations reveal that over 60 percent of the targets engaged by more than one battalion of field artillery had changed location in the preceding 30 minutes. Tactical targets are expected to be even more transitory in the future. This indicates that we may not be able to engage most of the profitable targets simply because our planning procedures for the use of nuclear weapons are too cumbersome. Current procedures should, therefore, be reexamined in order to achieve maximum effectiveness from these powerful weapons.

A review of US policy with respect to nuclear weapons is necessary for an understanding of our current method of employing these weapons. During and after World War II, nuclear bombs were considered to be strategic weapons only. This is entirely understandable when one considers the conditions which existed in the latter stages of the war. The only weapons which had been exploded against an

enemy were used to attain a strategic objective and the entire impact of their use on the war effort was strategic. It is not unusual that many thought nuclear weapons would be used only in a strategic role in future warfare.

The postwar decisions to continue development of weapons which would fit into this pattern seemed entirely logical and the use of a high percentage of our nuclear weapons to support ground forces would have been considered heresy. Scientists and other adherents of the strategic concept could present formidable arguments against the development of tactical nuclear weapons. For example, the fact that much more of the scarce fissionable material (uranium and plutonium) would be required for a given number of tactical weapons than for the same number of strategic weapons then under development was used to justify the directing of our effort toward the development and production of strategic weapons. This appeared to be a logical course of action to our planners and so was fully accepted as a basic tenet of the weapons program.

Development of Tactical Weapons

Consequently, the development of weapons appropriate for close support of Army forces was not initiated on a large scale until the early 1950's when the relative scarcity of fissionable material began to be overcome. Once the development of tactical weapons was initiated it progressed

Procedures for utilizing weapons we now have must be streamlined and plans made for the time when nuclear weapons will be more plentiful if we are to achieve maximum effectiveness from these powerful weapons

at a rapid rate, as evidenced by the successful firing of a nuclear projectile from a 280-mm gun at Desert Rock, Nevada, in the spring of 1953. Within three years from that date we could deliver tactical nuclear weapons against an enemy with the *Corporal*, *Honest John*, 280-mm gun, and 8-inch howitzer. This nuclear capability existed in our forces throughout the world and was primarily a result of the Army's foresight in developing delivery systems capable of firing nuclear weapons long before the nuclear warheads were available for them.

The 10 years which elapsed between the end of World War II and the time that quantity production of nuclear weapons for the close support of ground forces was achieved was more than ample to develop the doctrine for employing the weapons and refining the procedures required to place a weapon on a given target. Unfortunately, some portions of the doctrine and the simplified staff procedures necessary for the rapid and effective employment of nuclear weapons did not progress at the same rate as did the development of the weapons.

The basic elements of our doctrine until 1956 required that nuclear weapons be used primarily against well-defined and analyzed targets and as an adjunct of the commander's basic plan. Scarcity of weapons affected planning to the extent that

the availability of large numbers of weapons was not seriously considered. Operational control of nuclear weapons was retained at corps level because of the many unusual problems it was thought these weapons would bring to the battlefield. Centralized control, with the attendant elaborate process required for a subordinate commander to obtain authority for the use of a weapon, was the single most restrictive feature of the employment procedures.

Present Concepts

Present concepts of operating in an era of nuclear plenty in both general and limited war environments have done much to overcome the effects of our previously lagging doctrine. The emphasis now being placed on small weapons, and on their employment by battle group and division commanders, makes it more imperative that the procedures required to place a weapon on a target be streamlined in every way. The staff planning involved, as the primary element of the employment procedures, is the area in which the greatest practical advances can be made in the rapid and effective employment of the weapons we now possess.

Planning for the employment of nuclear weapons can be accomplished almost routinely when time is of no premium. In such a case, use of the weapons can be integrated thoroughly with nonatomic fire support and maneuver. Coordination with adjacent units can be made, detailed calculations as to predicted effects completed, friendly personnel notified in an unhurried manner, and troop safety criteria established and checked. The target analyst may spend up to two hours on a precise calculation of the expected damage and other elements of a complete target analysis. Figures can be checked and rechecked and ideas exchanged with other staff officers. In general, our planning procedures are adequate for this type employment.

The greatest gains from our use of nuclear weapons, however, will accrue

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when we locate and hit a target which the enemy temporarily presents: the unexpected concentration or the location of a unit in bivouac or in reserve. These will be the most profitable targets. We must be able to strike them quickly or they will disappear. Rapid employment against a fleeting target is expected to be the normal type of employment for small-yield nuclear weapons and presents our most difficult problem. There will not be time for lengthy calculations of expected damage, elaborate coordination with adjacent units, or delays involved in obtaining authority from higher headquarters to fire the weapon.

Need for Revision

The process of streamlining the necessary procedures in order to employ nuclear weapons effectively and on short notice lies largely in two fields. Much of the solution is in prior planning—anticipating the possible use of nuclear weapons and preplanning as many phases of the operation as possible. Another important means of streamlining the procedures is to integrate that portion of the staff planning pertaining to nuclear weapons employment in a manner so that it does not interfere with other staff actions. These two means of improving our current procedures will be analyzed, considering first the integration of nuclear weapons planning into our staff procedures.

The command and staff sequence involved in planning for the tactical employment of nuclear weapons does not vary from the sequence used when nuclear weapons are not available. However, at each step in staff planning when nuclear weapons are employed, there may be additional aspects of the situation which the commander or staff officer should consider. An analysis of these additional aspects or considerations, as shown in Figure 1, indicates they can be dovetailed with other staff planning without changing the sequence, requiring appreciably more time, or otherwise upsetting our

usual method of staff planning sequence.

Practical prior planning with respect to nuclear weapons employment involves the continuous selection of potential nuclear targets by the G2 and G3 representatives, and the hasty analysis and evaluation of these targets by the G3 representative to determine if they may be profitable targets, thus warranting additional study (Figure 2). These actions will identify many excellent nuclear targets which otherwise might go unnoticed. They also reduce the time required to complete the staff planning by eliminating from further consideration inappropriate targets, and selecting for detailed analysis the targets which offer the greatest reward, if attacked.

Hasty Analysis

The hasty analysis of all potential nuclear targets at division level cannot be accomplished continuously solely by the G3 and his especially trained analyst; it must be accomplished by the officers on duty in the G3 section and the Fire Support Coordination Center (FSCC). Rapidly changing situations and fast-moving units will not permit us the luxury of using only selected officers for the hasty analysis of targets: all experienced officers must possess this capability. Fortunately, such an analysis does not require lengthy training and can be accomplished most effectively by officers who possess the prerequisites for assignment to a G3 section.

The G3, or his especially trained assistant, must ensure that the method of performing a hasty analysis is understood by all officers who may be required to perform such an analysis. After several supervised hasty analyses have been performed, the officers should become proficient in this action which requires the exercise of good judgment and basic knowledge of the data pertaining to nuclear weapons effects, but not detailed technical knowledge or previous experience in the nuclear weapons field. The combination of continuous iden-

OUTLINE OF COMMAND AND STAFF PROCESS

Planning sequence

Additional aspects or considerations when nuclear weapons are available.

- | Planning sequence | Additional aspects or considerations when nuclear weapons are available. |
|---|--|
| 1. Planning prior to receipt of mission. | Select potential nuclear targets and perform hasty analysis of these targets to determine which should be analyzed in more detail (continuous process). |
| 2. Commander's planning guidance when mission received. | Tentative plan for employment of nuclear weapons to include objective of nuclear attack. Troop safety criteria or other restricting factors, if appropriate. |
| 3. Staff estimates and consolidated staff recommendation. | Selection of tentative targets after detailed analysis of all previously selected potential targets. Recommendations to include the type weapon, yield, height of burst, desired ground zero, and time of burst for each weapon; delivery system to be used; and troop safety precautions, if appropriate. |
| 4. Commander's estimate and decision. | Targets to be attacked with nuclear weapons, method of integrating use of nuclear weapons with other elements of operation. |
| 5. Commander's concept of operation. | General plan for use of nuclear weapons. This may include amplifying the decision concerning the type weapon, yield, height of burst, time of attack, and target for each weapon to be used; coordination of maneuvering elements or defensive forces with nuclear attack. |
| 6. Completed planning and preparation of Operation Order or Operation Plan. | Items which may be stated in the Operation Order or Operation Plan include essentials of commander's concept and additional information concerning the employment of each weapon, such as instructions to subordinate units to effect coordination and to ensure troop safety. Elements of the prestrike analysis and instruction to delivery units usually are included in the Fire Support Plan Annex. |
| 7. Supervision. | Active direction of forces to ensure coordination with nuclear attack and to exploit effects of nuclear attack. Use of alternate plan if nuclear attack not effective, or if more effective than predicted. |
| 8. Reports. | Poststrike analysis and damage assessment and reports to higher headquarters. Notification to adjacent and nearby units of contaminated areas. |

Figure 1.



tification of potential targets and hasty analysis of these targets in the prior planning phase will pay rich dividends in time saved and in the most profitable use of the available weapons.

Detailed Analysis

The detailed target analysis is the primary additional item encountered in the staff process which is peculiar to the employment of nuclear weapons. This relatively new element of our procedure prob-

ably is the least understood of our staff actions. Knowledge of nuclear weapons, their effects, and facility in applying this knowledge are essential in performing a target analysis. Unusual technical skills are not required. A nuclear weapons employment officer, who functions as a member of the FSCC, usually performs the detailed analysis. He will have completed a course at one of several Army schools prior to his qualification as an analyst. The weapons and effects data he uses will

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be obtained from current training literature on nuclear weapons and their employment.

The limited selection of weapons usually available to a division, for example, automatically narrows the choice open to the analyst, thereby permitting him to perform a more rapid analysis. For convenience, most needed data can be placed on acetate (thus making a template) and the tables and graphs in the manuals used primarily to provide additional information which the analyst will need to consider before arriving at his final recommendations. In his detailed analysis, the analyst studies the target to determine if it meets the stated purpose of the nuclear attack for a particular operation or meets the commander's general criteria for the employment of nuclear weapons.

The considerations are both tactical and technical and the analyst does not merely apply rules to a potential target provided him by someone else. He actively seeks methods of employing nuclear weapons effectively. He recommends the use of weapons he feels will be profitable even if the commander's guidance has not specifically included nuclear weapons employment. His recommendations, when incorporated in the staff estimate, include as a minimum the type of weapon and yield, desired ground zero, time of burst, height of burst, and the delivery system to be used if there are substantial advantages to be gained by using a particular delivery system.

Results Obtained

A clear and concise explanation of the results of the target analysis is both helpful to the commander and saves time by informing the staff of the essential elements in the recommended employment of the nuclear weapons. This can be accomplished when the staff estimates and recommendations are presented to the commander and may be given by the G3 or he may designate his target analyst to present that portion pertaining to the em-

ployment of nuclear weapons. In such a presentation it is more meaningful to place a template over each target and explain the predicted effects from the map and template.

The commander thus can see such items as the proximity of friendly units to the burst area, coverage of the target by the burst, and many other factors which have influenced the target analyst in making his recommendations and which affect the employment of the weapon. The commander can better visualize the over-all results which are expected from the employment of the nuclear weapons if these are shown on a map. (See Figure 3.) For obvious reasons this visual method of presenting data is preferred over the use of mathematical phraseology to express the expected damage.

Other Actions

The actions discussed concerning that portion of the command and staff process leading to the commander's decision may be the most important means of developing more rapid procedures but there are many other actions that can be taken to employ nuclear weapons more effectively. These are both procedural and doctrinal. Some require a new and different approach to the problem. Included are:

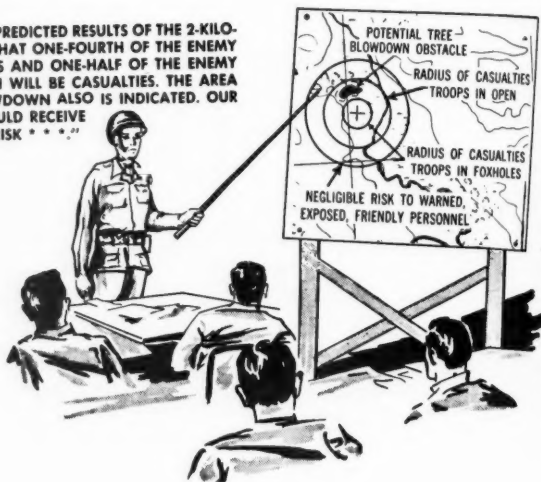
1. Routine delegation of the authority to expend weapons to lower levels—normally to the commander who controls the delivery system. We talk about this but too seldom do it in field exercises, map exercises, command post exercises, or war games. To be most effective, the delegation of authority should be without restrictions on employment of the weapons except those restrictions required for safety and those necessary to gain greater advantage from use of the weapon, such as a restriction because of a coordinated attack.

2. Overcoming the mental barrier of many officers who consider the employment of nuclear weapons to be a technical

THE VISUAL METHOD OF PRESENTING DATA CONCERNING EXPECTED RESULTS IS USUALLY PREFERRED OVER THE USE OF MATHEMATICAL PHRASEOLOGY.

THIS...

"HERE YOU SEE THE PREDICTED RESULTS OF THE 2-KILO-TON BURST. I ESTIMATE THAT ONE-FOURTH OF THE ENEMY PERSONNEL IN FOXHOLES AND ONE-HALF OF THE ENEMY PERSONNEL IN THE OPEN WILL BE CASUALTIES. THE AREA OF PROBABLE TREE BLOWDOWN ALSO IS INDICATED. OUR FRONTLINE TROOPS SHOULD RECEIVE LESS THAN NEGLECTIBLE RISK * * *"



NOT THIS!..

"I ESTIMATE THERE IS A .764 PROBABILITY OF ACHIEVING MODERATE DAMAGE TO .36 OF THE TARGET IF * * *"

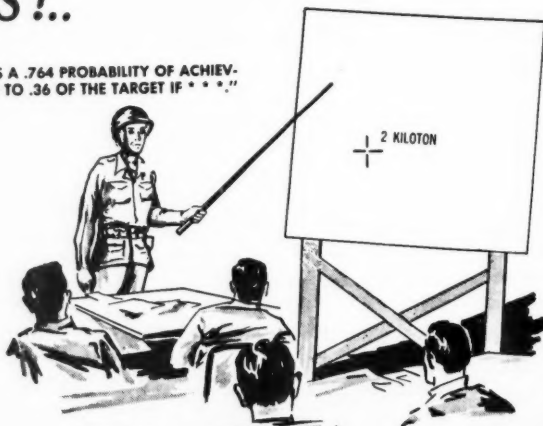


FIGURE 3.

problem filled with pitfalls for the officer who is not a technician. The staff officer with great knowledge of the technical aspects of nuclear weapons employment can be a tremendous help to the commander, but the considered judgment of the tactical commander remains as the essential feature in the effective employment of nuclear weapons. The commander must have a thorough understanding of the capabilities and limitations of nuclear weapons but such an understanding does not require unusual technical knowledge. In this respect, the improved training literature recently prepared at the U. S. Army Command and General Staff College should contribute materially to a much broader understanding of nuclear weapons employment by all officers. A high percentage of the material has been placed in an unclassified text, data and procedures have been greatly simplified, and many mathematical calculations previously required have been eliminated. This training literature is now being used at the College and in the Army Service Schools, and is being processed for Army-wide distribution.

3. Emphasize the practical approach in field exercises and CPX's. For example, we should consistently:

a. Base estimates on existing conditions of terrain and the enemy situation, not on a book value developed from ideal circumstances.

b. Move the nuclear components or warhead sections, not simulate their movement.

c. Fire a spotting round using data calculated for the nuclear weapon when firing can be accomplished.

The use of actual data of the type enumerated will help develop a feel for the problems involved in the employment of nuclear weapons.

Conclusion

Our ability to capitalize on the advantages of the new divisional organizations, indeed, even our ability to fight effectively may be jeopardized unless we streamline the procedures for utilizing the weapons we now have and actively plan for the day when nuclear weapons will be more plentiful. The actions discussed will increase our ability to employ the weapons we now possess and also will make possible the effective employment of the much larger number of nuclear weapons expected to be available in the very near future.

Continuous combat readiness means that the products of our matériel development and military training programs must constantly mesh with the changing requirements imposed by tactical evolution. This evolution has been greatly accelerated recently by the advent of nuclear firepower and long-range missiles. So must be the process of meeting its requirements.

General Bruce C. Clarke

The Military Intelligence Organization

Lieutenant Colonel Paul Goodman, *Artillery*
Commanding Officer, 319th Military Intelligence Battalion

THE importance of proper intelligence in military operations has been recognized for centuries. In 500 B. C., Sun Tzu, a Chinese philosopher and military leader, wrote in *The Art of War*:

If you know the enemy and yourself, you need not fear the results of a hundred battles. If you know yourself but not the enemy, for every victory you will suffer a defeat. If you know neither yourself nor the enemy, you are a fool who will meet defeat in every battle.

Operational intelligence personnel and agencies of one type or another have been available to military commanders since the days of the most primitive weapons. Information of the enemy received from scouts, reconnaissance in force, and prisoners of war helped Alexander the Great defeat a superior Persian force at Arbela in 331 B. C. Frederick the Great was victorious at Rossback in 1757 because the French failed to make maximum use of reconnaissance and security. The outcome of the battles of Jena, Chattanooga, the Marne, and the Bulge might not have been the same if the intelligence picture had been different.

Today, more than at any previous time in the history of the United States Army, there is an urgent need for an efficient intelligence organization to support the field commander. The tendency to depopulate the battlefield, technological advances, and the increased emphasis now being placed on nuclear weapons have highlighted our requirement for an all-weather, rapid, and

accurate mechanism for long-range target acquisition and surveillance. The complexity of our present-day military structure, with its increased emphasis on small, cohesive commands necessitates a speedy flow of properly evaluated information relative to the real and the potential enemy. Only with such information can timely, accurate decisions be made at every echelon. The likelihood that the battlefield of the future will be wider and deeper than at any time in the past highlights our need for intelligence in depth. If we are to employ our best weapons effectively, with their increased ranges and destructive powers, we must have an efficient means of locating and designating appropriate targets for them.

Development

The metamorphosis of the military intelligence organization from an embryonic pool of operational specialists into a compact, administratively adequate organization began in World War II. It was during that war that the need for intelligence personnel with special linguistic and non-linguistic skills became apparent. From both the accomplishments and the mistakes of World War II grew the present concept of organization and utilization of military intelligence personnel.

At first the emphasis was on counter-intelligence activities. Later there were hurried efforts to train linguists to become interrogators, translators, and interpreters. Most of the specially trained nonlinguistic intelligence specialists were

Today, more than any time in history, modern battlefield tactics and techniques require that military intelligence support be organized to provide field commanders more extensive and rapid intelligence coverage

pooled, to be available where and when needed, while some were attached as teams to various combat units throughout the world. Combat units, already burdened with increased administrative and training problems, conducted their own schools to provide the intelligence skills that were sorely lacking. All these efforts were commendable; but while they solved some problems, they created others. In the field the teams of specially trained intelligence personnel sometimes were neglected by the units to which they were attached and frequently left to rely on their own resources.

Prompted by an increased awareness of the need for a more effective means of coordinating the operational combat intelligence effort, the first military intelligence service organization was activated shortly after the end of World War II. This organization grouped linguists, non-linguists, and administrative personnel into a cohesive unit with a commander and a staff. The emphasis was on positive intelligence skills, that is, those skills that concern themselves with acquiring and processing information of the enemy, the weather, and the terrain, rather than on those active and passive measures that were designed to deny information about our forces. Detachments, platoons, and battalions composed of various combinations of "cells" or "teams" of specially trained linguistic and nonlinguistic intelligence personnel were formed.

Lieutenant Colonel Paul Goodman holds a Master of Arts degree from Columbia University and is a graduate of the U. S. Army Command and General Staff College. During World War II he was an Assistant Division G2 in Italy. He left the service after the war and was recalled to duty during the Korean conflict. He was assigned to the faculty of the Army War College and later served as staff secretary of the United Nations Command Component of the Military Armistice Commission in Korea. He has been with the 319th Military Intelligence Battalion, Fort Hood, Texas, since September 1954, where he is now commanding officer.

This organization went through various stages of development until a new one was devised with an eye toward integrating all combat intelligence and counterintelligence agencies available in the field army. This new organization was employed and evaluated in Louisiana during Exercise *Sage Brush* in the fall of 1955; and, except for a few modifications, the present military intelligence organization is basically the same as the one employed in Louisiana.

Present Organization

The military intelligence organization, for the field army as it is presently constituted, can provide specialized support in the fields of order of battle, photo interpretation, security, interrogation of prisoners of war, interpretation and translation, technical intelligence, editing, strategic intelligence, research and analysis, military censorship, and in field operations intelligence. These personnel are organized into detachments, platoons, companies, battalions, and groups. Except for a few isolated instances, the "cellular" or "team" structure has disappeared.

The organization of a detachment that is designed to support a division in the field indicates the support that may be expected of a typical military intelligence organization. (See chart.)

The detachment headquarters authorizes a commander, and provides for centrally controlled administrative, supply, and maintenance personnel. The commander looks after the interests of his detachment, and by so doing, frees the Division G2 to devote his time to the policy forming and planning aspects of his position.

The order of battle analysts, with their ability to organize and evaluate detailed information of the enemy, give clarity to what otherwise would be chaos in keeping track of enemy activity. Since the order of battle analysts consolidate the information that leads to an evaluation of the enemy's capabilities, they play an important part in planning the collection effort.

A successful order of battle analyst can produce a map that corresponds closely to the map being maintained by the enemy G3.

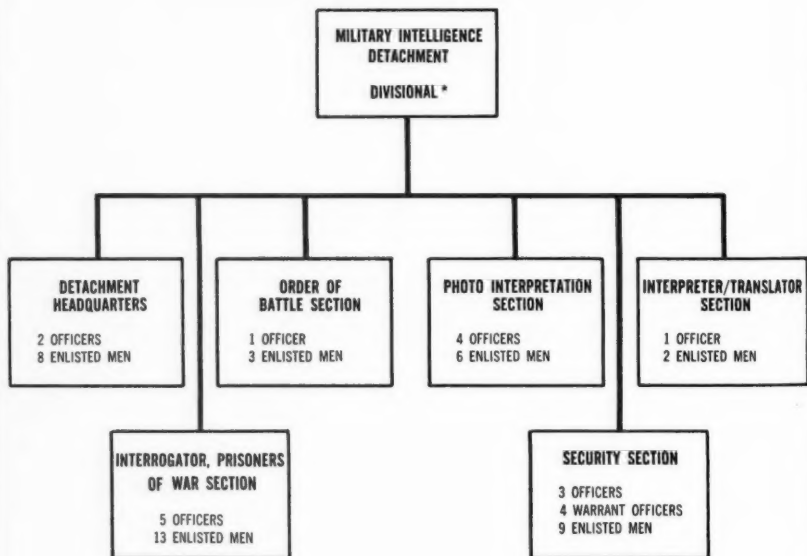
The air photo interpreters, now critically in demand, can give meaning to an aerial photograph taken at high altitude

The security section, with its counter-intelligence mission, can furnish the assistance and guidance that are needed to provide security to a command and to prevent surprise.

Of the three classifications of linguists—interrogators, interpreters, and trans-

MILITARY INTELLIGENCE DETACHMENT, DIVISIONAL

BASED ON TABLE OF ORGANIZATION AND EQUIPMENT (TOE) 30-17D
DATED 3 DECEMBER 1957



* AUTHORIZED STRENGTH (FULL) AS PRESCRIBED IN TOE 30-17D:
16 OFFICERS, 4 WARRANT OFFICERS, 41 ENLISTED MEN

behind enemy lines during daylight or at night. What may appear like swimming pools and dots or blurs to an untrained observer become valuable keys to pinpointing enemy missile bases, tank traps, and critical emplacements to a trained interpreter.

lators—the interrogators require the most intensive military education. Besides requiring a high degree of fluency in the language of the enemy, the interrogator must be well-versed in the background of the enemy country. He must keep abreast of the tactical situation, and he must be

an expert in the art of applied psychology. He must understand enemy tactics and doctrine; he should be well-versed in enemy weapons and equipment. Our new weapons have not negated the value of prisoners of war, guerrillas, escapees, evaders, and survivors to provide a commander with a rich source of information.

The interpreter speaks English and the language of a foreign country. He can assist everyone in an organization, from the commanding general involved in complex negotiations, to the private who must find his way among the friendly civilians who speak no English. His background and training should be as comprehensive as that of the interrogator, since he is called on frequently to assist him; but he does not necessarily require intensive training in interrogation techniques.

The translator, with his ability to translate written material to and from a foreign language, can supply enemy information which cannot be obtained through any other source.

Corps and Army

The detachment that supports a corps in the field differs from the division detachment in that there are more personnel in each of the sections; and a technical intelligence section, an editorial section, and a documents translation section have been added.

The technical intelligence coordinators gather details pertaining to foreign technological development, especially as they apply to the battlefield.

The editors, originally designated to edit the individual reports of the interrogators and translators who had difficulty with the English language, also can assist by editing the many reports that emanate from the office of the G2.

The field army normally is supported by a military intelligence battalion which is authorized the same intelligence specialties as the division and corps detachments, plus a strategic intelligence research and

analysis section, military censors, and field operations intelligence personnel.

The strategic intelligence research and analysis personnel keep their fingers on the pulse of the warmaking potential of foreign nations. Usually employed at field army level, they delve into the political, economic, sociological, and scientific aspects of the enemy as they pertain to military planning and operations.

The military censors survey communications to prevent valuable information from reaching the enemy. A byproduct of their operations is the detection of illicit hostile activity and the collection of information that has intelligence value.

It may be seen from the brief descriptions of the work performed in each of the areas discussed that the field of military intelligence is in many ways highly specialized and technical in nature, whether in the linguistic or nonlinguistic field. But the most successful military intelligence specialists are good soldiers first and specialists or technicians second. They are specially trained officers and enlisted men who have integrity and a sense of dedication, rather than cloak-and-dagger types who have that well-known "passion for anonymity." The work of an intelligence specialist is not so much hazardous as it is painstaking; and most officers and soldiers can be trained from the ground up to be successful in this field if they are properly motivated.

The current requirements for acceptance into the military intelligence organization are high for officers and enlisted men. All must possess special qualifications for an intelligence specialty—linguistic or nonlinguistic.

Evaluation

A preliminary evaluation of the new military intelligence organization reveals many favorable aspects and a few possible shortcomings. The advantages of an integrated intelligence organization with its provisions for centralized control have

been mentioned. The benefits that now can be derived by consolidating training facilities must not be overlooked. The administrative and supply facilities that are available now to each military intelligence organization give it the independence that it needs for efficient operation. The assurance that personnel will be properly trained, equipped, and provided for gives each officer and enlisted man in a military intelligence unit a sense of belonging that is important to his morale and efficiency.

Two problem areas that pertain to the new organization are apparent at this time. First, flexibility in the formation of tailored forces is less feasible now than when the cellular "teams" existed. With the increased need for forming task forces, landing teams, and other special forces, the need for intelligence support will vary. The current fixed organization may impede the flexibility that will be needed for hasty operations since the formation of various size teams would disrupt the fixed organization somewhat—both from the point of view of personnel and equipment.

Second, doctrine regarding the employment of military intelligence units, and command relationships between the military intelligence unit commander and his supported headquarters are in need of clarification. Existing doctrine pertaining to the support that an artillery battalion gives an infantry battalion or other standardized support arrangements now clearly established in the Army are not fully applicable to the military intelligence organization. This is true because of its complexity and the problems that arise when some of its sections are integrated into the G2 Section that is being supported. Doctrine pertaining to command relationships must assure that the military intelligence unit commander is left free to exercise his command authority without becoming too enmeshed in operational requirements.

Both these problem areas must be examined in light of the relatively recent

reorganization. It is too early to tell how the new organization will withstand the test of combat. Preliminary evaluations in the field have demonstrated that the concept of an integrated intelligence organization, one in which combat and counterintelligence elements are combined, is workable and basically sound. Needed now is frequent testing and reappraisal, with each test to have specific objectives. There is a further need for freedom to make changes in the organization where and when they are needed, in order to ensure that the final product will be an efficient intelligence machine that can produce significant intelligence concerning a real or potential enemy where and when such intelligence is needed.

Conclusion

In order that the military intelligence organization function properly, commanders and their staffs at all echelons must be fully aware of the capabilities of the specially trained personnel who are available to them.

In the past the effectiveness of these personnel and agencies has varied in direct proportion to the degree of command emphasis that has been placed on intelligence activities, and to the training and capabilities of the various officers and enlisted men assigned to intelligence duties.

Training programs must assure that realistic intelligence play is included in all field and command post exercises so that not only will the intelligence personnel receive better training, but that commanders and staffs will acquire experience in employing them. Intelligence play must be realistic, abundant, and challenging for all participants. An efficient tool now is available. With appropriate emphasis and proper utilization, the new military intelligence organization should prove to be an effective weapon on the battlefield in assisting commanders to avoid surprise and make wise decisions.

KEEPING PACE WITH THE FUTURE--

The Moral Basis for Instruction

Colonel Hughes L. Ash, *Infantry*

Faculty, U. S. Army Command and General Staff College

... the moral qualities are among the most important subjects in war. They are the spirits which permeate the whole sphere of war. They attach themselves sooner or later and with greater affinity to the will which sets in motion and guides the whole mass of forces, and they unite so to speak with it in one whole, because it is itself a moral quality.—Clausewitz

This is the twelfth in a series of articles expanding various aspects of "USA Command and General Staff College Keeps Pace With the Future," written by Major General Lionel C. McGarr, USA, Commandant of the College, and published in the April 1957 issue of the MILITARY REVIEW. —Editor.

THIS article extends the article "The Complete Man" by Major General Lionel C. McGarr, Commandant, USA CGSC, published in the October 1958 issue of the *Military Review* and shows more specifically how the College seeks to enhance the moral and ethical development of its students as future commanders and general staff officers.

Essential Qualities for Military Leadership

The qualities that go to make up a successful higher level military leader are complex and can be stated in various ways. Of course, terminology in this is greatly complicated by the subjective nature of command and the consequent problem of

semantics. For the purpose of this discussion, and at the risk of oversimplification, we can consider the essential qualities to include *willpower*, *courage*, *judgment*, *flexibility of mind*, *knowledge*, *sense of locality and timing*, and *integrity*. This list of qualities, while not complete, generally includes those considered essential by prominent military leaders and writers throughout the history of warfare. Differences in the qualities required at various levels of command, while significant, are primarily matters of emphasis and degree.

Willpower is based on courage, and courage is of two kinds: physical and moral. Physical courage is courage in the "place of danger" while moral courage is courage in the "place of responsibility." Moral courage includes the willingness to make decisions against self-interest and the willingness, if necessary, to lose one's job. Willpower is closely related to enthusiasm and energy and presupposes stamina. The line between willpower and willfulness, or obstinacy, is narrow.

Judgment is required to make sound decisions and is based on training, experience, and *character*. Judgment includes the

Recognizing that more than professional competence is required of our present-day leaders, the USA CGSC stresses character development and ethical standards together with the study of tactical concepts

qualities of stability and presence of mind. Judgment of men is especially important. A balance is required between willpower and judgment.

A high order of flexibility of mind is required to cope successfully with the uncertainties and changing conditions of battle. The changing nature of warfare under the impact of modern science and new weapons is making this quality even more essential than in the past. Flexibility of mind is disciplined, constructive imagination. Uncontrolled, it can result in emotionalism and unreasoning stubbornness which in turn harm the moral qualities.

Knowledge presupposes knowledge of both tactics and administrative support, the importance of the latter increasing with the level of command. The higher level commander cannot have detailed knowledge of every subordinate's job; it is enough if he has a sound understanding of capabilities. Exceptional intelligence is also an essential quality in higher level commanders; however, judgment, as defined above, is probably even more important.

Sense of locality and timing is an essential military trait closely allied with judgment. It is the ability to visualize terrain and time and space factors in military operations. In conjunction with

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other essential qualities, it includes the ability and courage to judge the overall administrative support risk, a significantly important factor in higher command.

Integrity, honesty, humility, and loyalty are required to obtain and maintain the confidence of subordinates. Integrity is the atmosphere in which all the other characteristics operate. It is closely allied to motivation and moral courage.

Thus the various qualities of leadership interact, must be combined in harmonious proportions, and all are interwoven with intangible, moral values.

Special Importance of Moral Qualities in the Military

While moral qualities are essential to successful leadership in any walk of life, let us briefly consider why they are of special importance in military endeavor. The differences described below are, of course, differences primarily in degree.

Military command is that combination of "example, persuasion, and compulsion" by which the leader gets his men to do what he wants them to do even though they do not realize they have the group capacity to do it or do not want to do it. The military leader has *total* responsibility for all that he does or fails to do.

War moves in an atmosphere of "danger, physical effort, uncertainty, and chance." The accomplishment of objectives, whether seizing a hill, building a bridge, or moving up supplies, is immensely complicated by armed enemy action, a factor not present in any other form of human endeavor. The magnitude of this factor can be illustrated by the hypothetical example of attempting to build the Hoover Dam under continuous air, artillery, and ground attack. Under the pressures of enemy, weather, and chance, even the machine itself develops special resistance.

In the Army—particularly in the Army in the Field—there is a difference between

leadership and management. Management in the civilian use of the term is more a matter of cold management of dollars and things and of routine and usually is based on corporate decisions. Military leadership is the management of dollars, material, and human lives. It implies total responsibility—command—is based on individual decisions, and depends to a greater degree on character and personality traits. *It includes* responsibility for sound management, which grows in importance in peacetime.

The military leader unlike his civilian counterpart is part of a military hierarchy. His headquarters is part of a chain of command which starts at levels below him and extends to the Department of the Army and to the Department of Defense. He is, therefore, not an independent agent, regardless of his rank or responsibility, but is subject to the policies, decisions, and pressures of successive higher echelons.

Further, the military leader has to provide answers that will work, based on what is known of the situation, and then obtain results against an established timetable, regardless of the circumstances. Once he has received his orders and made his decision he must accept the risks, drive through to the objective, and stand or fall on the results to a greater degree than his civilian counterpart.

In addition, unlike his civilian counterpart, the military professional is able to fully practice his profession only in time of war. In wartime, the military incentives—the chance for great achievement and advancement or failure and relief—are highly effective. In peacetime, the soldier must adjust to incentives less suited to the military and be guided by sense of duty and patient preparation for war that may never come. For his counterpart, there is the highly effective dollar incentive. Also in time of peace, competition between and within the services for funds, man-

power, and resources place additional strains on objectivity and integrity.

Further, the combined arms and services commander must pull together diverse Arms and Services units and branch experts and advisors. These traditions and branch *esprit* are strengths on the battlefield but require strong and experienced leadership to integrate them into the overall fighting team. In addition, his teams frequently must be thrown together from new or partially trained personnel on short notice and key members are subject to becoming losses through combat casualties.

The Effects of Modern Conditions

The employment of nuclear weapons on future battlefields, and the threat of their employment in limited war and situations short of war, combined with the politico-ideological nature of modern war, serve only to intensify the value of the moral qualities in war. This is illustrated by the fact that drastic reductions in battlefield reaction and decision time caused by new tactical doctrine for nuclear war and the political ramifications of situations short of war give more *responsibility* to a battle group commander today than was delegated to very senior commanders in World War II. Also the rapid pace of technology and the critical nature of research and development, production, and training lead times, together with increasing pressures resulting from necessary financial decisions in the face of rising cost of military hardware, are placing strains on peacetime military decisions and management of a magnitude unknown in the past.

The softening effect of the ever higher standards of living of our Nation and the advancing pace of our civilization also place an increasing premium on the moral qualities of both military and civilian leadership. In spite of the blessings of natural resources our country would not have become great without the rugged pioneer philosophy and idealism of our

forefathers; it will not remain great without these same qualities in our military leaders. Human history is studded with the ruins of empires that abandoned these principles.

The College Objective

As mentioned in General McGarr's article "The Complete Man," one of the objectives of the College reorientation and reorganization for the 1957-58 Course was character development and the fostering of professional and ethical values.

The College believes that character traits can be further developed and refined by study, example, classroom practice, and association with fellow students of high moral caliber in an atmosphere of an intensive and traditionally demanding academic course. At the same time the College realizes that the continuing development it can effect is one of degree and one that is fostered to a large extent by environment and example and is *perishable under overemphasis*.

Even with the gifts of human understanding and of professional competence arising from careful training, our military leader will not be complete without the third attribute of greatness; namely, character—character which reflects inner strength and justified confidence in oneself.

The scope of the College effort in furtherance of this objective, therefore, includes consideration of professional responsibility, College environment, instruction, and the responsibility of the faculty, in relation to the individual student and the opportunity thereby afforded him for self-improvement.

Professional Responsibility

Throughout a student's stay at Leavenworth he is constantly impressed with the role of the professional soldier in the Army, the Army's part in the Nation's Defense Establishment, and the place of the Defense Establishment in the American Government and way of life. Continued expansion of an officer's horizon is the *sine qua non* of growth in moral re-

sponsibility commensurate with increasing rank and span of influence after graduation from the College. The College takes the first essential step by recognizing that the nuclear battlefield commander whose moral horizons are limited to purely military matters is not the man to be trusted with instruments which can literally destroy civilization and defeat both military and political objectives of war.

The College Environment

The basic requirements for a favorable College environment for character development include an atmosphere of mutual trust and confidence between the College and the student; clear delineation of ethical standards the College expects in the student; and the development of the student's sense of responsibility for one another.

This desired atmosphere is, of course, based on the integrity of each individual officer. Trust fosters trustworthiness.

—General Maxwell D. Taylor

Therefore, the College substitutes individual judgment, discretion, and the officer's personal integrity for restrictive regulations and cumbersome administrative procedures. Examinations are conducted with a minimum of administrative control. Certificates have been eliminated. Students are permitted up to one entire day's absence in class on their own cognizance when they deem it necessary for personal emergencies.

A policy of mutual trust and confidence presupposes common agreement on what is right and wrong. A student must know and understand the high standards he is expected to live by. At the opening of each course the expected standards are explained in a command orientation, to in-

clude those applicable to examinations and other instruction. The student is informed, and his subsequent experience at the College confirms, that developing and maintaining high standards is a student, as well as a College, responsibility; that it is a group as well as an individual problem. This necessitates and results in group generated action to improve continually the academic environment.

The student also is frankly informed that while the Army and the College are not witch-hunting, there is no place in the officer corps for an individual who lacks the character to meet the standards essential to the College atmosphere of mutual trust and confidence. This orientation is intentionally detailed to ensure understanding. It is a "one time" procedure, since the College believes that moralizing is both deadly and self-defeating.

Student participation in the improvement of ethical standards is illustrated in the Student Advisory Committee on Standards. This committee consists of the Class President as chairman and representatives from each classroom. The committee evaluates and submits recommendations to the Commandant on College policies and procedures with a view to improvement of the moral and ethical development of the student and the enhancement of the moral stature of the officer corps. The Class Supervisor assists and guides, but is not a member of the committee.

The most significant element of the College environment is the Leavenworth tradition itself. This is exemplified, not just by the USA CGSC flag, the Leavenworth crest, the Leavenworth lamp, and the historical surroundings, but also by the tradition of hard work, high standards, and continuous daily challenge confronting the student at this opportune phase of his career development.

Incorporation Into Instruction

College instruction in this area is based on the premise that it is normal and real-

istic to integrate moral and ethical aspects of command in the tactical and administrative support judgment and decision-making problems of regular College instruction. In fact, instruction which does not consider these inherent aspects of staff advice and decision-making is not fully realistic in that it does not fully develop the student's capacity of effective and responsible decisions. This is readily accomplished without either diversion of instructional hours or moralizing.

Early in the course the student receives a comprehensive unit of instruction on leadership, which includes the ethical aspects and provides the "doctrinal basis" for leadership instruction integrated throughout the course. This instruction orients on the levels of command of the Army in the Field while especially emphasizing that leadership at all echelons impacts on the indispensable constant in war—the soldier on the ground.

This unit of instruction is reinforced by an eminent military guest speaker on the ethical aspects of higher level leadership and is amplified by the question and answer period that follows. In addition, certain other guest speakers are requested by the College to touch on this subject in their presentation.

Basic staff instruction in the Specific Staff course of study points out that sound staff organization and operation require an ethical foundation of honesty, decisiveness, and courage. The commander must be given accurate information and objective recommendations regardless of their popularity; and, once a decision is made, the staff officer must carry it out as wholeheartedly as though it were his own.

The student next encounters applicatory instruction containing requirements specifically designed to bring out the ethical aspects of decision-making and command. These are mainly case type problems requiring discussion and decision. These requirements are few in number to avoid

overemphasis which would leave the student the impression that this instruction is an end in itself.

After this sampling of specific requirements, coverage in the remainder of the course—the bulk of the course—is accomplished by normal, realistic integration of moral and ethical considerations in applicatory tactical and administrative support problems. As mentioned earlier, instruction which does not consider these aspects is not realistic and does not fully develop the art of command and student capacity for responsible, effective staff action, hence all courses of study in the curriculum contain requirements which integrate ethical considerations.

Impact of Instructional Methods

Another of the instructional objectives of the College—decision-making—accentuates the display of moral courage on the part of the student. While the College makes frequent use of Small Group Discussions within the framework of map exercises, where appropriate, each student is required to make his own *individual* decision. These decisions are frequently presented to the entire class with many resulting differences of opinion. Here the student is afforded an opportunity to practice moral courage by “sticking to his guns,” though he may find himself in an obvious minority.

The frequent use of discussion as a learning medium further impacts upon the individual student in his relationship to his classmates. The weight of his fellow students' constant evaluation of his professional opinion is an ever-present and significant part of instruction.

Role of the Instructor

Naturally, the most significant direct influence on student character development is the individual instructor in his day-to-day classroom performance. Each instructor has a highly demanding, specific, personal, and direct responsibility to contribute positively to the College objec-

tive of character development. He must create classroom opportunities for students to exercise moral courage, intellectual honesty, and integrity. He must set a good example. While he notes and compliments good student examples, he must take appropriate corrective action where indicated. These actions must not take the form of moralizing or “do-goodism,” rather they must be obviously right and fair and exemplify the ethical standards sought.

The instructor on occasion is confronted with a student who equivocates when a decision is called for. He also encounters the student who “parrots” the answer which he believes the College wants to hear. These situations necessitate definite but diplomatic and tactful disapproval. The instructor will not permit the student to hide behind generalities or clichés, nor will he be permitted to stall while trying to grasp the sense of the group. Decisiveness is vitally essential to military success, hence the student must have the courage to make up his mind.

The instructor encourages the individualism, moral courage, and intellectual honesty of students who profess minority views, provided the views are constructive and supported by sound reasoning. He calls on the student who rarely volunteers an opinion, especially in decision-making situations. He also calls on students with unique solutions or solutions at variance with the majority, to afford them the opportunity to defend their views. However, these situations are carefully evaluated, since the goal is not to reward poor solutions or necessarily to embarrass a student who has one.

The critique phase of classroom discussion is most demanding of the instructor. Here, in addition to achieving the primary purpose of his instruction, he must be ever alert to detect ethical shortcomings or neglect of significant moral issues bearing on the problems. He must ensure that every decision does in fact bear the *stamp of responsibility*.

Other Contributions

The elimination of solution-oriented instruction and a single fixed "College solution" requires the student to make up his own mind, to come firmly to grips with the problem, to forego the formula approach to military problem-solving, to apply principles intelligently, and to demonstrate the courage of his convictions. The instructor does not attempt to steer the student into a specific, predetermined solution, but rather to require him to solve a problem based on the situation at hand. A College solution, when used, is presented as a workable solution in a given situation, recognizing that in any given tactical situation there are other good solutions and also that a different situation would call for a different solution. This frank, forthright approach stimulates student *thinking* and sets the example for his intellectual honesty. Emphasis is therefore placed on the application of principles, reasoning ability, judgment, and decisiveness in contrast to echoing clichés and memorizing. Intellectual honesty, moral courage, and integrity are thereby practiced and fostered.

Despite the sweeping changes in subject matter and techniques that have taken place at this College, the fundamental objective of the course remains the same: to produce officers with the mental discipline to think straight and the moral courage to make resolute decisions. Thinkers and deciders are what the Army has always expected from Leavenworth and never have they been more urgently needed. Though the necessary qualities of mind and character cannot be taught, certainly they can be developed by men with potential ability.

—General Bruce C. Clarke

Opening Address to 1958-59 Classes at USA CGSC

The increased orientation of examinations on decision-making and reasoning ability, like the demise of the *single best solution*, has discouraged most seekers of "pat answers." It has emphasized the necessity for comprehensive understanding, for self-criticism, and for moral courage. The student's awareness that he is

being evaluated by both his instructors and his fellow students for these moral qualities as part of the student evaluation program provides additional wholesome motivation.

Summary

Recognizing that there is a set of ethical standards fundamentally essential to the professionalism of the individual officer, the U. S. Army Command and General Staff College has accepted character development as one of its instructional objectives. This objective is sought without diverting instructional hours and without attendant fanfare and talk. The scope of this area is reflected in the College environment, in instruction, and in the responsibility of the faculty, all of which contain both direct and indirect measures.

The College environment, inherently strong and healthy in the Leavenworth tradition, reflects an atmosphere of mutual trust and confidence between the College and the students. Clear-cut ethical standards are well-known to both the faculty and students.

The College provides effective instruc-

tional coverage of ethical and moral standards through initial background instruction. Within this framework the student progresses to instruction specifically designed to emphasize the moral aspects of staff action and decision-making. Further instruction integrates moral and ethical considerations with the student frequently

choosing the harder right instead of the easier wrong, which is the essence of leadership and a fundamental which the College makes every effort to impress upon each student. The ever-present weight of fellow students' evaluation of the individual's professionalism is a significant factor in instruction and student learning.

The instructor exerts a profound influence on character development by meeting

the classroom challenge to set the example, to place ethics in unobtrusive perspective, and to ensure that every act and decision bear the stamp of responsibility.

Armed with professional competence and imbued with increasing strength of character, the current Leavenworth graduate will continue to provide worthy and reliable leadership for the indispensable constant in war—even nuclear war—the soldier on the ground.

We may be truly thankful every hour of every day for the military strength of America, but our security is not to be found in armaments alone, but rather . . . in the toughness of our moral fiber, and the firmness of our spirit—in the quality of our self-discipline—and in our readiness to shoulder responsibility manfully.

—Secretary of the Army Wilber M. Brucker

MILITARY NOTES

AROUND THE WORLD

UNITED STATES

Aluminum Raft

An aluminum raft that can be erected manually in 15 minutes has been developed for use in ferrying lightweight combat vehicles across rivers and streams. The raft, utilizing half-pontons joined at their sterns, is capable of carrying a 12-ton load in currents as swift as five miles an hour. The half-pontons used in the raft weigh 650 pounds each; all components of the lightweight ferry can be carried on a 2½-ton truck and a pole type trailer.—News item.

Civil Service Carriers

Two civil service-manned utility aircraft carriers, the *Croatan* and the *Breton*, have joined the Atlantic and Pacific Fleets respectively. The vessels each displace 9,800 tons and are 512 feet long with a 65-foot beam. These vessels, which have been serving as helicopter carriers, will be used for ferrying aircraft to the fleets, and will not function in an operational combat capacity. They are manned by civilian crews of 13 officers and 62 men each.—News item.

Helicopter Assault Squadron

A new and highly mobile amphibious assault squadron has been formed in the Atlantic Amphibious Force. The squadron is formed around the aircraft carrier

Boxer, which has been converted to an amphibious helicopter assault ship.

In addition to the *Boxer*, the squadron will have four high-speed dock landing ships, all of which have helicopter landing platforms. These latter vessels are the *Hermitage*, *Fort Snelling*, *Plymouth Rock*, and *Spiegel Grove*.—News item.

Helicopter School

About 950 officer students will receive primary flight training at the Army Primary Helicopter School at Camp Wolters, Texas, during Fiscal Year 1960. Of this number, 500 will be officer pilots already qualified in the operation of fixed-wing aircraft, 300 will be officers not previously designated as Army aviators, and the remaining 150 will be from Organized Reserve and National Guard units and foreign officers training under the MDAP.—News item.

Semiautomatic Rifles

The Army will issue the new *M14* rifle in a semiautomatic version only. Unit armorers will be given the parts to convert the rifle to selective automatic-semiautomatic as necessary. The *M15*, heavy barreled version of the weapon which is equipped with a bipod and designed to replace the *BAR*, will be issued with selector switch installed.—News item.

Beach Discharge Lighter

The Army's newest amphibious support vessel is the *Lt Col John U D Page*, a versatile 338-foot-long beach discharge lighter. The *Page* is equipped to receive loaded wheeled or tracked vehicles from roll-on roll-off deep draft vessels by means of a stern ramp.

The shallow draft vessel then moves



US Army Photograph
Shallow draft resupply ship *Page*

close to the beach where the vehicle cargo can be discharged easily over the bow ramp. The *Page* will have an all-Army crew.—News item.

Turbojet Surveillance Drone

A small turbojet surveillance drone aircraft, called the *Swallow* and bearing the official designation of *SD-4*, will use a variety of advanced techniques for military



US Army Photograph
Delta-wing surveillance drone *Swallow*

surveillance purposes including radar, infrared, and photography.

In operation, the *Swallow* will start its missions by being fired into the air from a special zero length launcher with the

aid of rockets. Once airborne, the rockets will drop off and the turbojet engine of the drone will take over. Missions can be carried out by a preprogrammed automatic guidance system or by ground or air control systems.

The *Swallow* has a delta wingspread of 11 feet. The scoop like air intake duct for the jet engine is located under the fuselage of the drone. Recovery and landing of the aircraft will be by parachute.—News item.

Tanks for Marines

The 60-ton *M103A1* tank is planned for use by elements of the United States Marines. The main armament of the *M103A1* is a 120-mm high velocity gun, the largest weapon ever to be mounted on a United States tank and considered a match for any other tank gun in the world. Other armament consists of 30-caliber machineguns firing coaxially with the 120-mm turret gun and a .50-caliber machinegun mounted on top of the turret. The machineguns are capable of being fired from within the tank.

The vehicle carries a five-man crew and is controlled by a steering wheel and steering column gearshift similar to that in automobiles having automatic transmissions.—News item.

Helmet Design

The United States Naval Medical Field Research Laboratory has completed a special study on military helmet design. Their report includes a history of helmet development, a study of the design theory of protective headgear, and a complete bibliography on the subject. It also presents carefully thought-out conclusions and recommendations as to the shape and material which should be considered in future research and development of helmets. A description of the protective headgear in use by military forces throughout the world is a part of this comprehensive and interesting report.—News item.

Research Vessels

Research vessels recently added to the United States naval forces include two vessels converted for test and research firing of missiles and two others altered to function in oceanographic research.

The guided missile ship *King County*, converted from a tank landing ship, carries a mockup submarine hull on her deck and originally was intended to serve as a full-scale prototype of the missile handling system for the guided missile nuclear submarine *Halibut*. A *Regulus II* missile has been launched from the *King County* off Point Mugu, California, and landed safely at its destination 250 miles inshore. It has since been announced that the Navy's 78 million-dollar *Regulus II* program has been canceled to permit the development of more advanced systems beyond the inherent capabilities of the *Regulus II*.

The experimental missile launching ship *Observation Island*, designed specially for the test firing of the *Polaris* intermediate range ballistic missile, was converted from the *Empire State Mariner* cargo vessel. The *Observation Island* is equipped with ships' inertial navigation system, (SINS), a highly sophisticated electronic system which permits a vessel to navigate for long distances over extended periods of time without conventional outside references such as radar, radio, and celestial fixes. Other new equipment of the vessel includes Loran-C a highly accurate long-range radio navigational system, and Jog Log, a device which measures ocean currents and speeds, and feeds this information into the computers of the missile launching system.

The two oceanographic research vessels are the *Gibbs*, converted from the former seaplane tender *San Carlos*, and the *Chain*, converted from the former salvage ship *ARS-20*. The 1,800-ton *Chain* will be operated by a private research organization that conducts oceanographic research for the Office of Naval Research.

The *Gibbs* displaces 2,800 tons and has

a maximum speed of 18 knots. The vessel will be operated by the Military Sea Transportation Service and will be manned by a civilian crew. A special feature of its equipment will be the largest and heaviest deep sea winch ever used by this country for oceanic research. This winch will be



US Navy Photograph
Oceanographic survey vessel *Chain*

able to handle up to 40,000 feet of wire rope, and lower or raise as much as 20 tons of equipment.—News item.

'Skyhawk' Night Fighter

The A4D-2N is a night attack version of the A4D *Skyhawk*, the United States Navy's lightest attack plane. The night attack version, like other models of the *Skyhawk*, will be able to carry nuclear



US Navy Photograph
A4D-2N night attack *Skyhawk*

weapons, rockets, or guided missiles. The versatile aircraft, which has a takeoff weight of about 15,000 pounds, is equipped for inflight refueling.—News item.

New Missiles

The Navy has tested the *Arcon* meteorological research missile successfully. The *Arcon*, expected to aid in predicting flight vibration conditions of the fleet ballistic missile *Polaris*, is 12 feet long and six inches in diameter. It can carry a 40-pound payload to a height of 70 miles, or a 10-pound payload to 100 miles.

Another new research missile, the *Iris*, designed to carry a 100-pound payload to

in full production, will use a solid propellant.

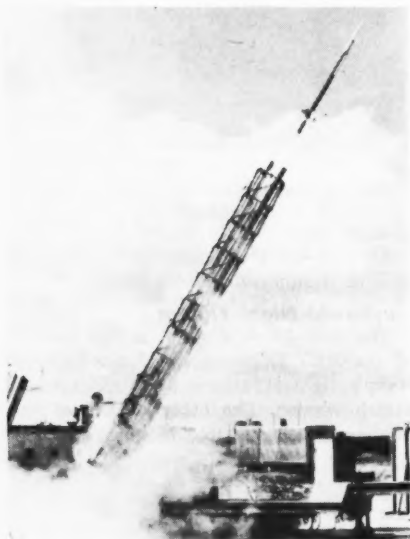
The *Eagle*, an air-to-air weapon of which most details are classified, is described as a long-range, high performance guided missile. A Navy spokesman has indicated that the aircraft from which the *Eagle* will be launched may be relatively slow-moving since the high performance is to be built into the missile instead of the manned aircraft. The current standard Navy air-to-air missiles are the *Sidewinder* and the *Sparrow*.

It has been announced that no more orders will be placed for the *Rascal* bomber-launched missile. The air-to-ground *Rascal* has a range of over 75 miles when launched from a *B-47* medium bomber.—News item.

Ground Observer Corps

The services of approximately 280,000 volunteers of the Ground Observer Corps, who have been manning observation posts for the past nine years, are no longer required and the organization has been discontinued. One of the reasons cited for the discontinuance was the growing effectiveness of military air defense radar stations in the polar regions and along the Nation's east and west coasts. Also considered was the fact that the ground observer system of receiving, processing, and transmitting information was fast becoming unable to keep up with the increasing speeds of manned bombers and the weapons systems now used in air defense.

The civilian volunteers of the corps have been serving in about 16,000 observation posts and 50 filter centers throughout the country. Information as to plane movements observed were plotted at filter centers and relayed to radar direction centers of the air defense system. The 200 Air Force officers and 1,000 airmen who were also assigned to the ground observer program are to be released for other duties.—News item.



US Navy Photograph
Arcon meteorological rocket

an altitude of 200 miles, is planned for completion early in 1959.

A third research rocket, the *Arcas*, also is under test. The *Arcas* is designed for a low acceleration rate and is planned for use in atmospheric research. The low acceleration rate eliminates the need and expense of ruggedizing instrumentation.

The *Gimlet*, an air-launched, five-inch, folding-fin rocket has been approved by the Navy. The *Gimlet*, which is not yet

Communications Center

The United States Army's newly developed mobile communications center consists of a family of aluminum houses or shelters, each fully equipped and capable of operating independently. Each shelter is designed to serve as a center for teletype, radio, telephone, telegraph, or other communication media. Several of the aluminum houses can be hooked together quickly to fit any battle situation—small



US Army Photograph

Air-transportable communications center

centers for forward units may have only two or three shelters, while larger headquarters may have as many as 24. Each shelter carries its own independent supply of electricity or can function on a central source of power. The elements of the system are designed specifically to be transportable by helicopter. They also can be moved by conventional surface transportation such as trucks.—Official release.

Vessels Commissioned

Two wooden-hulled, nonmagnetic minesweepers, the *Ability* class *Assurance* and the *Agile* class *Affray*, have been commissioned. The 963-ton *Assurance* is the third and last vessel of her class, the other two being the *Ability* and the *Alacrity*.

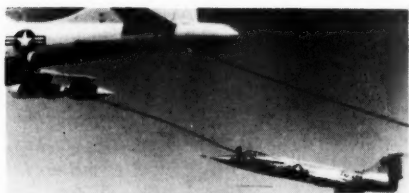
The *Affray* is 165 feet long and displaces 750 tons fully loaded. Both the *Assurance* and the *Affray* have top speeds of about

15 knots and are equipped with controllable pitch propellers. They are designed to conduct all types of mine countermeasures anywhere in the world, and contain the latest improvements in design and equipment. They also are fitted out to function as flagships with facilities to enable a commander to direct groups of ships in mine countermeasure operations.

A total of 100 of the *Agile* class minesweepers are built or under construction for the United States Navy and the Mutual Defense Assistance Program. Thirty-five of these vessels have been allocated to allied nations under MDAP.—News item.

Removable Refueling Probe

The *F-104C Starfighter* is equipped with a unique removable aerial refueling probe. For missions where aerial refueling is necessary, the probe is left in place on the left side of the forward fuselage about



US Air Force Photograph

Starfighter refuels from an FB-50J tanker

four inches below the canopy sill. For ground support or other short-range missions the probe is removed. The *F-104C*, which is the holder of the world speed record of 1,404 miles an hour and the altitude record of 91,243 feet, recently established new speed climbing marks for altitudes ranging from 3,000 meters in 41.85 seconds (old mark 44.39) to 12,000 meters in one minute, 39.9 seconds (old mark one minute, 52 seconds). The *F-104C* is powered by the advanced *J79-7* engine.—News item.

NORWAY

Frigates Transferred

Three Canadian *River* class frigates loaned to Norway in 1956 have been officially transferred to the Norwegian Navy. The three warships, originally called the *Prestonian*, *Toronto*, and *Penatang*, and renamed *Troll*, *Garm*, and *Draug*, were modernized by Canada for antisubmarine warfare prior to the transfer. These vessels displace 2,249 tons fully loaded and are capable of a speed of 20 knots. They are armed with two *Squid* triple-barrel depth charge mortars in addition to anti-aircraft artillery weapons.—News item.

CHILE

Heavy Cruisers

Heaviest operational warships in the Chilean Fleet are two ex-United States *Brooklyn* class cruisers. These vessels, named the *Prat* and the *O'Higgins*, displace 13,000 tons, and are capable of a speed of 32.5 knots. Armament consists of fifteen 6-inch and eight 5-inch guns, and 52 rapid fire antiaircraft weapons.



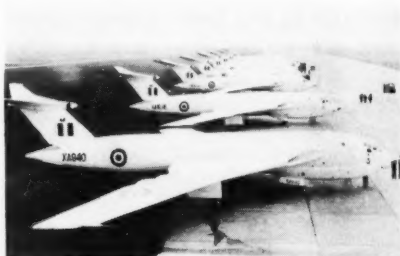
The *Prat* and the *Orella* refueling at sea from naval tanker *Montt*

These warships normally carry four aircraft, although hangar space can accommodate six aircraft if necessary. The existence of this large hangar gives the vessels an especially high and wide counter. Two stern catapults are mounted above the hangar as far outboard as possible.—News item.

GREAT BRITAIN

Strategic Bomber

The *Victor B-2* strategic heavy bomber is powered by four *Conway* bypass jet engines, each of which has a thrust rating of 17,250 pounds. The *B-1* version of the *Victor*, which is powered by *Sapphire* jet engines of 8,300 pounds thrust each, has flown at speeds beyond the speed of sound.



The Royal Air Force's *Victor B-1* bombers

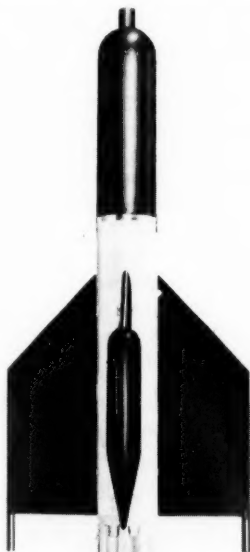
At operational heights it is said to be able to outfly and outmaneuver any fighter in squadron service in Great Britain.

The *B-1* has been in service with the Royal Air Force since mid-1958. Both the *B-1* and *B-2* models of the *Victor* are coated with white antiradiation paint, and are equipped for aerial refueling. According to an unofficial source, the *B-1* version has a wingspread of 110 feet and a maximum weight of 80 tons. The *B-2* has a 126-foot wingspread and an all-up weight of 185,000 pounds.—News item.

Antitank Weapon

The *Pye* antitank guided weapon system utilizes a wire-controlled missile about five feet long and six inches in diameter. The missile weighs approximately 80 pounds and has a rocket motor bolted on the rear for propulsion. The ground control equipment of the system weighs only 20 pounds and requires no external power source. The weapon is launched from a simple tubular zero length launcher; control of the missile in flight is by jet de-

flection. It can be launched either from the ground or from a vehicle. The firing and subsequent control can be carried out by one man. Ordinary binoculars can be used as an optical aid and a power sight control system is under development. The



Pye antitank guided weapon

operator's control is said to be very simple and does not require technical knowledge or skill.—News item.

ITALY

Nuclear Power Plans

Italy's first nuclear powerplant for electrical power is under construction at Latina, south of Rome. It will be a natural uranium, gas-cooled plant modeled on the facility in operation at Calder Hall, England (MR, Nov 1956, p 79), and is being built as a joint Italian-Great Britain proj-

ect. It will produce 1.2 billion kilowatt-hours of electrical power a year, and is to be completed by the end of 1961. It will cost approximately 60 million dollars and will be part of a proposed power grid for the power-poor south half of Italy. Construction of a second nuclear power station will start soon on the Garigliano River, about 50 miles to the southeast of Latina. This powerplant is to be constructed by a United States firm under the supervision of an Italian governmental agency.—News item.

JAPAN

Missiles Purchased

The Japanese Defense Ministry has purchased a quantity of *Oerlikon Model 56* surface-to-air missiles from Switzerland. Tests of the missiles will be designed to determine the feasibility of manufacturing them in Japanese factories. The initial shipment of the weapons consisted of 10 missiles and a launcher. The *Oerlikon Model 56* attains a speed of Mach 2.3 and utilizes beam-rider guidance with a proximity fuze.—News item.

AUSTRALIA

Range Extended

The Woomera Rocket Range in central Australia will be extended to a point near Port Hedland on the northwest coast, making it 1,200 miles in length, and the longest overland rocket range in the world. The range is being extended for the testing of the *Blue Streak* intermediate range ballistic missile (MR, Dec 1958, p 69).—News item.

Army Aerial Unit

Australia's regular army has formed its first aviation unit which will fly and maintain a fleet of eight American-built *Cessna 180's*. The aircraft have been modified especially for Australian flying conditions, and will be used for aerial scouting, reconnaissance, communications, and direction of artillery fire.—News item.

NATO

Scatter Radio System

The first operational links of the new and modern communications system have been turned over to the control of the Supreme Headquarters Allied Powers Europe (SHAPE). The four communication stations at Oslo, Trondheim, Mosjoen, and Bode—all in Norway—are the first of a series of troposphere scatter systems that will permit rapid and efficient communications between SHAPE and its various subordinate headquarters from Norway to Turkey. The system utilizes ultra-high frequency radio signals of far greater power than normal sets provide beamed at the troposphere which reflects some of the signal back to distant stations. Transmission of messages up to about 1,300 miles can be provided with fewer but more complicated stations. Completion date for the system has not been announced.—News item.

Missile Plans

The number of missile-equipped battalions in NATO's European Command has reached 30. Under present plans there are expected to be 100 such battalions by 1963.—News item.

THE NETHERLANDS

Strength Problems

Dutch officials are considering the possibility of decreasing the term of compulsory service for draftees, and increasing the number of soldiers in the regular army. The current tour of compulsory service is 18 months. The army presently numbers 90,000 of which 70,000 are draftees. It is expected that about 45,000 selective service men will be available for assignment to the army in 1959. NATO obligations of the Dutch armed forces include an army corps of two active divisions and a reserve division, and three regimental combat teams. Other NATO nations involved in similar strength prob-

lems are West Germany, which started with a 12-month term for her draftees and then decided it was necessary to extend the tour of service, and Belgium who cut the draft term from 18 to 15 months in 1957.—News item.

NORTH KOREA

Volunteers Withdrawn

According to a Communist Chinese source a total of 70,000 men, including the Chinese Peoples Volunteer Headquarters, three divisions, and logistical units, have returned to Communist China to complete the withdrawal of Chinese "volunteer" troops from North Korea. A small group of Chinese Communists is remaining to carry out the work of the military armistice commission. At one time Chinese troops in North Korea numbered at least a quarter of a million, according to a report.—News item.

JORDAN

Plan for 'Hunters'

A squadron of 12 British *Hunter* aircraft is to be provided by the United States to the Jordan Air Force. Some Jordanian pilots already have undergone advanced jet training in Great Britain and others will be trained by a British Air Force mission in Jordan. Other aircraft in the Jordan Air Force are British *Vampires* and United States *Sabres*.—News item.

UNITED ARAB REPUBLIC

Compulsory Training

Military training is to be made compulsory in the five universities of the United Arab Republic. Four of the universities involved are in Egypt, the other is in Syria. They have a total student enrollment of more than 10,000. Those who are outstanding in their training are to be exempted from the payment of tuition.—News item.

COMMUNIST CHINA

Foreign Trade

In 1958 Chinese-Soviet trade increased about 18 percent over that of the previous year. Communist China's exports to the Soviet Union were up by 23 percent, while imports from the USSR increased by 12 percent. According to Soviet figures, in 1957 Communist China exported approximately three quarters of a billion dollars worth of agricultural items, minerals, and fabrics to the Soviet Union, and imported about a half billion. It has been stated that more than 30 major Chinese enterprises would begin operation this year with Soviet equipment. About 40 to 50 percent of Communist China's foreign trade is with the USSR.—News item.

Airpower

The Communist Chinese Air Force consists of approximately 3,000 aircraft, of which about 1,500 are *MiG-15 Fagots*, *MiG-17 Freco*s, and a few *MiG-19 Farmers*. It has 300 additional piston engine fighters of the *LA-9 Fritz* and *LA-11 Fang* type. About 300 *IL-28 Beagle* light jet bombers, and some 400 *TU-2 Bat* and *TU-4 Bull* propeller-driven bombers, also are reported.

Transport aircraft in the Red Chinese Air Force total about 300, mostly *IL-12 Coaches*. It has been reported that the North Korean Air Force is closely aligned with that of Communist China. The North Korean air arm has more than 400 military aircraft, most of which are *MiG-15 Fagots*.—News item.

USSR

'Backfin' in Production

The *Yak-42 Backfin* medium-range bomber (MR, Aug 1958, p 72) is reported to exist in a mass production version and is said to be in the hands of the Soviet Air Force. The *Backfin*, which has a maximum speed of about 1,000 miles an hour at an altitude of 50,000 feet, weighs

slightly over 50 tons at takeoff. The aircraft features a wing with a sweepback of 60 degrees in the inner one-third and 46 degrees in the outer portions. Its two *M-209 (AM-3)* gas turbine engines each produce 22,440 pounds of thrust with afterburning. The two engines are mounted side by side within the fuselage of the aircraft with the air intakes on top of the fuselage. Utilizing only one engine, the *Backfin* attains a speed of nearly Mach 1.

Radar equipment of the *Yak-42* is mounted in a flat radome under the nose of the aircraft with other radars located in the streamlined protrusions of the fin assembly. Its armament includes an automatic-firing, tail-mounted 37-mm cannon and six 105-mm rockets.—News item.

Missile Bases

The following Soviet missile bases in satellite nations have been reported: East Germany: Kolberg; Libau; Memel; and Reval; Hungary: Hajmasker; Papa; and Tapolca; Czechoslovakia: Karlsbad; Joachimsthal; Bohmen-Budweis; Javorina; southwest of Reichenberg; and northeast of Olmutz.—News item.

Nuclear Icebreaker

The Soviet's nuclear-powered icebreaker *Lenin* will be driven by three nuclear reactors. All three reactors are reported to have been installed in the vessel which was launched in December 1958. The water-cooled reactors will provide steam for the three turbines which will generate 44,000 horsepower to propel the ship. The designed speed of the 16,000-ton vessel has been reported variously at 18 to 22 knots, and it is expected to be able to travel more than 70,000 miles without refueling. The *Lenin* is 438 feet long with an 88-foot beam. It has been estimated that the vessel will be able to smash through ice as much as six feet thick.—News item.

WEST GERMANY

Air Strength

The procurement of 300 United States *F-104 Starfighters* and 200 Italian *G.91* tactical fighter aircraft has been authorized. The procurement of 60 French helicopters also has been approved. The aircraft presently in use by the West German Luftwaffe, *F-84's* and *Sabres*, will be withdrawn from service when the new aircraft enter squadron service which is expected to be about 1963. At this time the total operating strength of the Luftwaffe will be 1,326 aircraft.—News item.

Additions to Fleet

The German Federal Navy has received six more warships from the United States and a frigate from Great Britain. The six vessels from the US are all landing ships. They include the medium landing ships (rocket) *Smyrna River* and *Thames River*, renamed *Otter* and *Natter* respectively, and four medium landing ships which will receive the names of *Eidechse*, *Krokodil*, *Salamander*, and *Viper*.

The British frigate received by the growing German Navy was the *Oakley*, the first of seven such vessels planned for transfer. The *Oakley*, a 1,610-ton vessel of the *Hunt* class, was refitted prior to the transfer and will be used by the German Navy as a training ship.—News item.

INDIA

Warships Launched

Two more warships for the Indian Navy have been launched by British shipbuilders. These vessels are the *Beas*, an anti-aircraft frigate, and the *Kuthar*, an anti-submarine frigate. The *Beas*, the second of her type to be acquired by India, is armed with four 4.5-inch guns and an antisubmarine depth charge mortar in addition to other weapons. The *Kuthar*, with two triple-barrel antisubmarine mortars, is the third of her type to be built for the Indian Navy.—News item.

MALAYA

Navy Transferred

The Royal Malayan Navy has been transferred to the control of the Federation of Malaya. The navy was set up in 1952 with one small minelayer, one landing craft, one maintenance repair craft, and seven seaward defense launches on loan from the British Navy. Ten British inshore minesweepers also have been transferred to the Malayan naval force as the first element of a further buildup. A coastal minesweeper and two more inshore minesweepers are planned for transfer in the future.

Great Britain has made Malaya a cash grant for the purchase of naval stores and equipment, and will help in the construction of a naval base at Port Swettenham near the upper end of the Strait of Malacca. The Malayan Navy presently is based at Singapore.—News item.

COLOMBIA

Modern Warships

The Swedish-built destroyers, *7 de Agosto* and *20 de Julio*, are modified versions of the Swedish *Halland* class vessels (MR, Jun 1957, p 75). Modifications differentiating the Colombian vessels from the *Halland* class include the increase of main batteries by the addition of a third twin-gun turret—bringing the total of 12-cm weapons to six in three turrets. The 40-mm antiaircraft artillery guns have been reduced from six to four, and the number of torpedo tubes from eight to four. The radar equipment is more extensive than on the *Halland*, and modifications also have been made in the fire control system. The vessels are fully air-conditioned for operation in tropical waters, and are provided with sprinkler arrangements for nuclear decontamination. They carry a complement of 21 officers and 227 men, and are designed for a speed of 35 knots.—News item.

MILITARY DIGESTS

Lessons Drawn in Advance From World War III

Digested by the MILITARY REVIEW from an article by Lieutenant Colonel Alberto Li Gobbi in "Revue Militaire Générale" (France) February and April 1958. Translation by Mr. LaVergne Dale, Leavenworth, Kansas.

The author herein presents a mythical discussion between Lieutenant Colonel Staff, a military expert of the 1957 era, who was involved in the planning for World War III and hence is looking forward to that war; and General Eccellenza, a military historian circa 1977, who had fought World War III and thus looked back upon it. The two characters in this imaginary debate are separated in viewpoint by 20 years, but brought together for this discussion by a "slip" in time and space.—Editor.

SEPARATED by a barrier of 20 years and the third Great War, the two gentlemen sat discussing that war, the one from the post-World War III vantage point of 1977, the other still blinded by the much more limited knowledge available in the pre-World War III era, 1957. Lieutenant Colonel Staff, the 1957 military expert, began the discussion by describing what he thought would be the three most probable forms of war in the period to come, grouping them under these three headings:

1. Cold war, waged with means other than firearms or edged weapons of any kind.

2. War, limited in point of space and means, fought by two or more countries

with conventional weapons after the type of the Korean war.

3. Total atomic war on a world scale.

General Eccellenza, historian of 1977, on the whole agreed that back in 1957, due to the particular prevailing mentality and the scant understanding of the times, these might have appeared to be the most probable types of war. He added, however, that the military experts of 1957 had devoted too little attention to three other possible types of war:

1. Guerrilla war by one or more peoples against an occupying foreign power.

2. War limited in point of space but fought with some atomic weapons in addition to conventional means.

3. Global war waged essentially with conventional weapons (possibly aided but not dominated by nuclear or thermonuclear weapons).

According to Eccellenza, in fact, it should have been sufficiently evident, even in 1957, that a total atomic war would become less and less probable as the two opposing groups of powers approached powerful atomic parity without having achieved the ability to destroy instantly their respective adversary by surprise.

In his opinion no motive could have been so strong as to justify a war from which would emerge neither vanquished nor vic-

tors, and whose sole result would have been the almost complete destruction of humanity and its civilization.

Once this point of "atomic balance" was attained, the fitting of the means to the end—limitation of the form of war in point of space and means—should have appeared more and more probable.

In support of his argument, the historian reminded the 1957 military expert that in the Second World War, for example, war chemicals had not been employed to any appreciable extent for the reason that both belligerents were in a position to make large-scale use of them. They had been employed, however, in the First World War and in a few other later small wars when only one of the parties was able to make use of them in extensive quantities.

The discussion between the historian of 1977 and the theoretician of 1957 was long and animated. In the end a compromise agreement was reached, that the types of war which the military experts of 1957 should have considered possible were the following:

1. Cold war in its various forms.
2. Guerrilla war by oppressed peoples against an occupying power or against restrictive forms of government, however imposed.
3. Limited war, mainly waged with conventional weapons.
4. Limited war waged with atomic and conventional weapons.
5. Global war waged mainly with conventional weapons (that is, in which atomic weapons do not play a decisive role).
6. Total global war waged with both atomic and conventional weapons.

Cold War

In the matter of cold war, the conduct of which is a responsibility foreign to the purely military domain, Staff and Eccellenza found a point of agreement in establishing that the most effective means

for combating it was that of having a powerful military force at one's disposal.

Their differences began to appear when they attempted to define what was to be understood by a "powerful military force."

According to Lieutenant Colonel Staff this must be constituted essentially by a powerful punitive atomic force of missiles with atomic warheads, and strategic bombers.

In the view of the man of 1957, the punitive atomic force—otherwise called deterrent, security, or inhibitive force—must be integrated with a "shield" of ground forces sufficient for defending the frontiers of the friendly countries from eventual enemy invasions for a certain period of time. In substance, the function of the "shield" would be that of allowing the punitive force the necessary time for carrying out its decisive task.

General Eccellenza replied that a military instrument of the type described by the Colonel was inharmonious, misproportioned, and altogether unsuited for combating any type of war whatsoever, inclusive of cold war.

He said, "It is a giant, apparently extremely powerful but actually quite fragile, and with feet of clay. One of its numerous Achilles' heels is constituted, for example, by its radar stations for aid in aerial navigation, missile control, and distant detection and warning.

"Without these installations, the airplanes and missiles of today and tomorrow are almost paralyzed. To be effective, all of these ground installations or, at least the greater part of them, must be quite advanced and, therefore, will be defended only by a thin veil of widely dispersed forces which can be a 'shield' in name only.

"Even if organized in depth these installations, by their very nature, are vulnerable to air and ground attacks and can be easy prey for small units of the classical type (parachute forces, and raiding

parties) or small fifth column or underground units.

"Moreover, a war instrument such as you favor, Colonel Staff, is far too difficult to control and too inflexible. It is a kind of colossal and monstrous maul, placed in the hands of the politicians to enable them to do what ought to be the work of a fine and delicate chisel—diplomats and politicians who, at every rustling of the leaves threatened to resort to it, would show a lack of self-control and of a sense of proportions.

"What the politicians need for easy and dexterous operations in the rather shallow but insidious waters of cold war is a harmonious military instrument, well-proportioned in its three dimensions—ground, sea, and air—and in the reciprocal relationships between fire, movement, and shock. An instrument, therefore, that is flexible and suited for meeting a very broad gamut of requirements and situations, from the smallest to the greatest.

"If one has only a 'punitive atomic force' at his disposal, no matter how powerful such a force may be, a cold war is more easily lost than won."

Guerrilla War

The historian, Eccellenza, in discussing guerrilla war, asserted that the West had suffered great injury by not having planned and used specialized counter-organizations to support the guerrilla wars of liberation in the countries oppressed by Russia. He also felt they should have organized, in time of peace in friendly countries, the moral and material "infrastructure" indispensable for staging organized and effective guerrilla war in case of enemy invasion.

Limited War

With respect to limited war waged generally with conventional weapons, the ideas of the two debaters were more or less in consonance. However, Eccellenza did express the thought that more con-

sideration should have been given to the experiences of past wars, from Napoleon's campaign in Spain to the rash of partisan wars in the various European countries occupied by the Soviets during the Second World War.

On the topics of limited war waged with both atomic and conventional weapons, and global war waged, in the main, with conventional weapons, as in the case of "guerrilla warfare by oppressed peoples," there was no true discussion but rather a kind of short recriminative monologue on the part of Eccellenza.

Lieutenant Colonel Staff in fact, said somewhat irritably that the military experts of his day had not gone deeply into these kinds of war which they considered entirely improbable and that, therefore, he did not have any particular ideas with reference to them.

Eccellenza remarked that this was dangerous, and not a particularly brilliant observation. And so, after a brief and unfruitful argument on the probabilities that these types of war would occur in the period of 1957-77 and their eventual duration, they passed on to the topic of total atomic global war.

Total War

Lieutenant Colonel Staff, with impassioned fervor and conviction, began to expound his own ideas on the subject of the *great war* which were similar to those shared by many military writers of his day. This was the only war for which, in his opinion, it seemed worthwhile to prepare, to live for, and, above all, to die for.

"Two great blocs—the Eastern, and the Western—are facing one another," said Lieutenant Colonel Staff. "Both are armed to the teeth with an astounding number of strategic and tactical atomic weapons together with the corresponding animate and inanimate means for launching them.

"The unexpected and violent unleashing of hostilities will be begun (and on this point Eccellenza was in agreement) by the

East. The immediate principal objective of this surprise attack: the destruction of the atomic power and of the will to fight on the Western bloc nations, or, at least, the attainment of atomic supremacy and the demoralization of the adversary.

"The Eastern ground forces will be able to launch an attack simultaneously with the beginning of hostilities or wait in dispersed locations and attack in successive forces after the violent initial atomic exchange has come to an end.

"The Western forces, having established an efficient warning radar system, will succeed in causing the enemy attack to find the majority of the airfields empty and the planes of the 'atomic punitive force' already in flight toward preselected strategic objectives such as missile launching bases, industrial complexes, and communication centers.

"In view of the system of 'dispersion' of military objectives established by the Western Nations, their long-range radar detection and warning system, and the high degree of efficiency of their intelligence service, it will be rather difficult for the East to gain their desired atomic supremacy. Considerably more serious for the West, on the other hand, will be the sudden losses of its civil population, of its artistic and cultural heritage and, to a lesser degree, of its industrial potential.

"This is because the Eastern bloc will have no scruples in placing these types of objectives at the top in their order of priority, and because the Western urban development will offer them extremely succulent and vulnerable objectives of limitless human, artistic, and cultural value, such as Rome, Paris, London, and New York.

"In contrast with this are the very scarce extramilitary objectives offered by an essentially fatalistic population which is supercontrolled and dispersed in small villages scattered over an immense, monotonous, and uniform territory.

"In this first phase, which should not

last more than a month, the shield constituted by the western ground forces will primarily seek survival, although defending the territory of the Western countries from enemy infiltrations. The naval forces should provide mobile 'atomic bases,' at the same time seeking to save themselves from destruction.

"At the end of the violent and destructive first phase, both of the adversaries should be in serious condition and the foreseeable situation should be as follows:

Atomic and aerial supremacy: held by the West, but with few atomic weapons and planes remaining. In the future, therefore, these means will have to be employed very circumspectly.

Remaining ground forces: the East numerically stronger, but incapable of conducting operations of any real scope.

Remaining naval forces: predominantly Western, but almost entirely deprived of effective naval bases.

Civil populations: the West considerably harder hit.

Industrial capacities: quite severely impaired on both sides.

"The first 'destructive' phase would be followed by a second phase of greater or lesser duration consisting of a reorganization race, and a third phase of resumption of limited—mainly ground—military operations leading to the conclusion of the war.

"It is obvious that the belligerent who, at the conclusion of the first phase, has succeeded in retaining a higher morale and, therefore, greater capacity for reorganization, will already have won the game.

"What I have roughly outlined," continued Lieutenant Colonel Staff, "is the general apocalyptic picture. The intense initial exchange will produce extensive destruction of vital points both in the forward and rear zones. Moreover, the fundamental problem of 'survival' will be aggravated by the tremendous devasta-

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tions to which the civil populations will be subjected.

"The air-ground battle will require a great decentralization of command, operational and logistical autonomy of the minor units, and initiative on the part of all commands, even of lesser grades. It will be impossible to effect mobilization and assembly in the classical sense of the terms, and extremely difficult to counteract losses by bringing up replacements from the rear. There probably will be considerable interference with military operations by the problems of civilian survival.

"Ground operations must, therefore, be characterized by dispersion, fluidity, rapid concentrations, rapid dispersions, and major activities during the periods of scant visibility and will seek close combat as quickly as possible on the enemy's territory as a protection from atomic reactions. Thus the advantage deriving from being first to invade his opponents territory can be of vital importance.

"The most probable form of the attack will be that of penetration on a vast scale by means of numerous infiltrations over a broad front by small, rapid units aided by the employment of parachute forces dropped in depth.

"Other forms of attack could be a conventional operation in which nuclear weapons are used to 'crack the crust,' with the attacking force either reorganizing on the enemy position or perhaps returning to its point of departure.

"This type of offensive operation, incidentally, is fairly difficult of execution and will be more particularly suited for essentially mechanized and armored formations. However, large-scale armored attacks will no longer be in vogue. Tanks will still be necessary, but only as components of the binomial 'infantry-armor' and of small and medium task forces, and night operations will be frequent.

"Conventional artillery will be almost completely replaced by atomic artillery which must form a part of all tactical

groups and groupments with independent missions.

"Defense, much more mobile and deeper than in the past, must tend to channel enemy attacks in zones of destruction. Both active and passive obstacles will be used to the maximum to prevent large-scale infiltration. The creation of worthwhile targets for nuclear engagement must be one of the principal intermediate aims of the defender.

"In general, we may look forward to two main types of defense. The static type will be based on strong points, zones of destruction, and highly mobile reserves.

"The other type of defense is essentially a very deep delaying action to exhaust the attacker's power, followed by a counter-attack to destroy the remnants of the attacking force and to reconquer yielded terrain.

"In both defense or attack relationship between the opposed air forces and atomic armaments, the speed and flexibility of signal communications, and the capacity for rapid location and designation of targets will be of supreme importance.

"Naturally, in view of the fact that the decisive phase of a war will be its first one, which will be of very brief duration, and in view of the fact that it will not be practicable to effect mobilization and assembly as in the past, the forces in active service at the moment of the outbreak of hostilities must be able to sustain alone the weight of the initial battle.

"Only a considerable time afterward, during the 'third phase,' will the strategic reserves of the overseas countries be able to intervene on the fields of battle—if it is not too late by this time.

"Summarizing, we can, therefore, agree with Fieramosca, that, the war of the future, even though it will embrace totally the countries involved, cannot be a war of many, but rather a war of few: it will not tolerate mass on the field of battle and excludes the mass of the population from the operating forces."

General Eccellenza listened with the greatest attention, without interrupting and without demonstrating either approval or dissent. After some moments of silence he replied as follows:

"You have painted a fascinating picture with ability and clarity. It reminds me, however, of the various pictures of the blitzkriegs which invariably adorn the walls of the brief corridors of peace which join together the long wars of humanity.

"You will remember, I think, that the first predictions of World War I were that it would last only a few months, to say nothing of the brilliant theories of blitz warfare during the years which preceded the Second World War.

"In spite of these experiences, in 1957 the theory of blitz warfare ruled anew. It was thought that there would be only about one month of actual war, followed by a considerable period of 'convalescence.' The fact that the two opposed blocs were in contact over a land front of more than 4,000 miles and each contained close to half a billion inhabitants scattered over the different continents, was apparently disregarded.

"It seems to me that in 1957 the experts committed at least one great imprudence by concentrating their attention almost exclusively on a war that was essentially monophase and practically instantaneous. Many military experts of your time, in the praiseworthy attempt to see beyond the radioactive smoke in order to discern the characteristics of the war of the future, were blinded by the brilliance of the nuclear or thermonuclear explosion. They had magnified the more spectacular and appealing aspects of the problem, passing over other questions of vital importance in a future war.

"Two of these neglected aspects are the factors of *time* and *number*.

"Of *time*, that is, of the recurring phenomenon of blitz warfare, I have already spoken. I wish only to add that, even

though in 1957 it was logically conceivable that military operations of a future war could be halted on a few fronts in a relatively short time, total paralysis over the entire 4,000 miles of front and the entire land area of the involved countries probably would not have been considered likely. The possibility of the total paralysis of the aviation of both the belligerents at the end of the so-called 'destructive first phase' would have appeared still less logical.

"Considering the violence and brief duration of this 'destructive first phase,' it seems strange that both the opposed blocs had such poor judgment as to empty their magazines as quickly as possible, running the risk of finding themselves with their pistols empty and facing an enemy who, even though gravely wounded, still retained a cartridge or two in his gun.

"Atomic superiority is achieved, in fact, not only by destroying the nuclear and thermonuclear weapons of the enemy but also by preserving, to the greatest extent possible, one's own."

"Another particular which leaves me doubtful is the rapidly descending curve of violence of the war. It starts out with extreme fierceness during the first two or three days, passes through a period of still very great fury during the first week, decreases in the second week, then sinks to a mortal calm in the following weeks.

"The wars of the past, inclusive of those launched by the totalitarian countries, have always had an ascending rather than a descending curve of development. Up to now I have found this perfectly reasonable.

"At any rate, even though admitting the existence of a destructive first phase of the characteristics you have described, I do not see how, in 1957, it could have been believed that operations on the seas could be paralyzed and annulled by the atomic weapons during the first phase—that a major part of the allied fleets and

their naval bases could be destroyed completely in a month's time.

"It should have been foreseen that the naval supremacy of the West would remain almost intact and be able to favorably influence and prolong for an indefinite time such amphibious operations, support for partisan formations, supplies, and evacuation.

"The ill-concealed contempt for *number* is a recurrent phenomenon which makes its appearance each time that a new weapon is introduced on the field of battle.

"It is a phenomenon which, basically, does honor to humanity because it shows the tendency of mind to raise itself above matter. It is, however, also the eternal illusion of politicians and a few of the military who see in the new weapons, freedom from the negative, vulgar, and costly dead weight of numbers in favor of the aristocratic principle of 'quality'—meaning by 'quality,' the individual armed with the new weapon.

"This is an eternal illusion which is fatally destined to be followed by an eternal disillusionment. Although a few individuals armed with the new weapons would have been sufficient for eliminating many individuals armed in the 'traditional' manner, *many individuals equipped with the new weapons will be necessary for conquering an enemy who is also armed with new weapons.*

"The armed forces of nations, in fact, always have become more numerous as the transition was made from bows and arrows to firearms. This is true in spite of the fact that a single modern tank is able to do considerably more material damage than an entire Roman legion.

"As for the expression cited by you concerning 'the exclusion of the mass of the population from the operating forces,' if this is intended to minimize the importance of the so-called 'partisan war' I take the liberty of not agreeing, not alone by virtue of a *posteriori* knowledge but also because

of the logical consequence of the premises you have drawn.

"A total war such as the one foreseen by you, will be characterized by: indiscriminate destruction of life and property; great weakening of local authorities and of the forces of public control; great dispersion of 'regular' combat forces and their means of subsistence; invasion of one's territory by enemy forces; and scarcity of food and other articles indispensable to human life.

"It is in just such an atmosphere that guerrilla warfare flourishes. Formations of partisans come into being inevitably, like fungi on a decaying tree trunk. They may be good or bad, controllable or not, depending on the influence of many circumstances. Not least of these is that of having made provision for them and, as far as possible, provided for their birth, development, and control.

"Another reason why 'paramilitary' or 'partisan' formations will flourish in the wars of the 1957-77 period more than in preceding wars is because operational missions of considerably more importance than in the past can be assigned to them in the new atmosphere of war.

Conclusions

"To sum up the question," General Eccellenza continued, "it appears to me that the military experts of 1957 fell into the following errors:

1. Up to 1957 the greater part of the Western military experts allowed themselves to be fascinated by the most spectacular and most apocalyptic type of war, considering such a war the most probable—if not even the only type possible.
2. Therefore, they failed to study thoroughly all the other types of war. Although circumstances did not warrant it, they seemed to look on these less showy types as improbable, if not impossible.
3. These same individuals committed

the eternal mistake of considering the war of the future a 'blitz war,' which would be over in a month. They concentrated their attention almost completely on this first tragic month of nuclear and thermonuclear 'give and take.'

4. As a result of this, they allowed themselves to be convinced by the alluring but deceptive argument that with the power and quality of weapons increased, they could, with impunity, reduce the strength and number of the units.

5. They forgot that the essential thing is not to maintain a certain degree of military power, but, rather, to have what it takes to defeat the enemy, whatever his capabilities might be.

6. In their studies, they seem to have forgotten that the atomic weapon is not able to obtain the decision alone any more than the cannon did when it appeared on the battlefield. The atomic weapon, above all, if possessed by both belligerents, is only a means and not even the most important in the achievement of victory. One must possess a military capacity which permits speedy exploitation of the atomic fire.

In other words, it seems to me that it is useless to go fishing, illegally, with enormous charges of dynamite if afterward one has neither the ability nor the boat needed for hurriedly gathering all or at least a large part of the dead and stunned fish before they go down or are carried away by the current.

7. They have interpreted badly, in my estimation, the historical truth that victory is obtained today, as yesterday, tomorrow, and always, by destroying

the enemy's power to fight, which is not exactly synonymous with destroying the enemy physically.

8. If it is true, as you have said, that in a situation of 'powerful atomic parity' the side which has been able better to preserve its will to fight will succeed in surviving and obtaining victory, you will be able to tell me, Colonel:

a. What did the Western military experts do for survivors or semisurvivors outside of declaring that they would have a wholly negligible role in the new war?

b. What did the Western military experts do (assuming but not conceding that their apocalyptic vision of the war was correct) to prevent the development, among the survivors on the enemy side, of a 'will to fight' that was even stronger and more desperate than that which animated them before the beginning of hostilities?

c. What did they do in their own masses of 'semiliving' to favor the upsurge of that feeling of a desperate will to survive, whether as individuals or as a civilization?

d. What have they planned for creating the moral and material conditions that are indispensable for the development of organized and effective guerrilla action in case of enemy invasion?

e. Seeing that old-style mobilization and assembly are no longer feasible, what did they do to render possible a 'mobilization of the future' in their invaded or otherwise hard-hit territories?"

General Eccellenza's final words ending the conversation were, "*The reply is easy, Colonel: 'NOTHING!'*"

Rockets and Soviet War Doctrine

Digested from an editorial in "Aeronautics" (Great Britain) June 1958. Copyright "Aeronautics."

MASSIVE advantages in weapon technology do not necessarily compensate for deficiencies in leadership or in understanding of the basic balances—the fundamental patterns and oppositions and stresses of war. The Western World would do well to take its eyes off the H-bomb and the horrific wonders that are being achieved by scientific and technical workers for a moment, in order to examine Soviet war doctrine.

Communist war theory used to deny any clear division between war and peace. A country's military strategy was said to be part of its character and its people and to be dictated by geography, economics, and productivity. A Communist country was supposed to proceed in the same manner whether it was at war or at peace. Its productivity was still compulsorily held at a high level and if its purpose happened to change, that did not affect its character or the larger issues of its existence.

In contrast to this unified theory, the Western World appears to think of war in two different ways; either total war or conventional war—either an absolute commitment with the use of H-bombs or else limited fighting by armies, navies, and air forces using the weapons they used before the time of Hiroshima and Nagasaki. Many now believe that total war would end in mutual destruction for attacker and attacked; that it would end in the obliteration of the white races and possibly of both white and colored races. But they think that limited wars might be waged without such dire consequences. Therefore, they plan and study in two different compartments—the deterrent for total war and the conventional forces for limited war.

From the structure of her armed forces and, in particular, from what is known of her aircraft, missiles, and rockets, it must be concluded that Russia plans in a single

compartment. She does not believe that war can be divided into these or any other separate categories.

It was shown in the parade in Moscow to celebrate the 40th anniversary of the Bolshevik revolution that the Russians have done a great deal of work on what might be called the middling missiles. They have semiactive homing ground-to-air missiles, solid fuel artillery rockets of 30 to 40 miles range, and tactical and strategic bombardment missiles, one with a liquid fuel motor of 60 tons thrust. The *Sputniks* suggest that Russia probably has intercontinental ballistic missiles as well. Her ladder of armaments has no rungs missing. It takes in every step from the rifle to the intercontinental ballistic missile.

The possibility that Russia might take military action with conventional weapons has often been discussed in Parliament and outside it. On the other hand the conception that war is one and indivisible and that the weapons employed are simply brought out to suit the circumstances, much as a dentist selects his instruments, has been overlooked. Western theorists draw a line between two different kinds of war and apportion their weapons into neat groups, whereas the Russians see only one kind of war and that a war in which conventional forces with conventional weapons are integrated with high-energy fueled supersonic aircraft, with thermonuclear weapons, and with ballistic missiles. The atomic weapon is not considered alone; it is looked upon as part of a comprehensive armory.

In struggling to maintain a position as a military power of some consequence, Britain should remember that a sound technical effort on weapons development must be rooted in a sound war doctrine; that the basic reasoning determines the merit of everything else.

Surprise and Deception

Digested by the MILITARY REVIEW from a copyrighted article by Major Muhammad Naqi Khan in "The Owl" (Pakistan) December 1957.

All warfare is based on deception. Hence when able to attack, we must seem unable; when using our forces, we must seem inactive; when we are near, we must make the enemy believe that we are away, when far away, we must make him believe we are near. Hold out baits to entice the enemy. Feign disorder, and crush him.

Sun Tzu, *The Art of War*

THE principle of annihilation is the fundamental law of war. It is intimately connected with the principle of "surprise," which is a particularly efficient means of defeating the enemy, and as old a method as war itself. It affects the enemy's will as well as his ability to fight which is the eventual aim of any war.

Surprise is attained best by applying the other principles of war in the least expected way. According to Clausewitz, "Surprise is more or less at the bottom of all military enterprises."

Surprise, in fact, is the product of speed and secrecy. It is of extreme importance to hide one's own plans from the enemy until he is unable to take any effective countermeasures. This is achieved by camouflage, concealment, and deception.

Of course, the enemy will only be deceived if he is not expecting a particular decision. The surest way to deceive is to execute a military decision with utmost speed—secrecy and speed are mutually interdependent. If secrecy cannot be maintained, speed must be increased, and if speed is not practicable, the enemy must be kept ignorant, otherwise surprise will never be achieved. The problem of a military commander is to minimize the time-lag between decision and execution. This, perhaps, is easier in the tactical field than in the strategic field.

The Factors

Surprise is not conceivable without adequate information. Primarily, we must

know our enemy in order to be able to predict his actions and reactions. To outwit him we must put ourselves in the shoes of his higher commanders and know their strength and weaknesses. We also have to study the behavior of his junior leaders and his soldiers.

Good intelligence can help us in two distinct fields.

First, in the assessment of the enemy's morale and how it compares with our own. On this will depend how successful we can be or how much we can hazard our own security for the sake of surprise.

Second, if concealment or deception is to form any part of our plan, we must know the organization and working of the enemy intelligence to ensure that the plan is both comprehensive and complete.

Surprise depends for its success partly on doing the unexpected and partly on a harmonious combination of the other principles of war. Not only must its impact be unexpected, but the plan itself must be sound, both tactically and strategically. It may be said that without good generalship we may only succeed in astonishing the enemy rather than surprising him.

Concealment

Concealment is a necessary safeguard for any plan that we may devise. The more we are able to conceal our objective the more we leave the enemy in doubt and anxiety, and the more he will fall prey to the unexpected. Concealment, of course,

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can be most effective when applied to policy. Pearl Harbor or the German invasion of Norway are clear examples of surprise gained by a sudden attack on an unsuspecting foe. *The surest way to success is to appear peaceful, concentrate secretly, and strike without warning.*

Concealment also is invaluable in hiding intentions, threatening more than one objective, and pretending to attack at one place while actually preparing for another. Potentially, all these factors are powerful weapons of surprise.

Invention

If a commander can use new and secret weapons, tactics, or methods, then his task becomes much easier. But the point to bear in mind is that these will contribute to surprise only once, perhaps during the initial stages of their employment. Once used, their effects and characteristics can be assessed by the enemy and chances of surprise become uncertain. The use of gas in 1915 by the Germans illustrates this point.

Deception

Deception may well form the substance of surprise itself. In this case the enemy has to be persuaded that our objective is other than what it actually is, and that the direction, timing, weight, and nature of blow are different from what we intend. All these will combine to force the enemy to dissipate his resources toward his own destruction. The history of warfare is the history of deception. This means of achieving surprise was elaborated considerably in the various cover plans of the last war which were prepared with great care and in great detail.

The Improbable

To do something that the enemy considers impossible is a sure way to surprise, provided the plan is militarily sound otherwise. Of course, it would be futile to select a course with insurmount-

able difficulties but, if they can be overcome, the fruits of surprise will be great. The Burma Campaign of World War II provides innumerable examples of this technique of achieving surprise with appreciable results.

Calculated Risk

If attempting the improbable is one path to surprise, then, in war, the way of danger is definitely another. According to Field Marshal Wavell, "The really great commander must have a spirit of adventure and a touch of the gambler in him."

Nowhere is the taking of risks more certain of success or more lavish in reward than in the realm of surprise. Many victories in past wars have been won by deliberate neglect of security—but the commander who jeopardizes his own security first must weigh very carefully the risk to his force against the known weaknesses of his enemy.

Audacity is more sure of success when the enemy intelligence is weak, his commanders indecisive, and his morale low. It is no accident of history that "fortune favors the brave," for the risk itself makes the act unexpected.

So far we have discussed factors affecting surprise from the enemy's point of view, but there are at least two very important considerations for our own troops. The first one is that, while we must find out all about the enemy, we must, at the same time, withhold similar information from the enemy. Without secrecy, all labor will be in vain. Speed of action sometimes may help in this respect and obviate special measures being enforced. The aim, however, should be to reduce the timelag between decision and execution to the barest minimum.

The second is the training of our own forces. No amount of good generalship will compensate for lack of efficiency and resoluteness on the part of troops engaged.

World War II

The first few years of the Second World War saw the truth of the statement, "Surprise is the key to victory."

On the European battlefield, the Germans conducted the war chiefly as a war of surprise. They attacked without warning and without any formal declaration. They timed their operations in such a way that their opponents were unable to mobilize in time. The Poles, Dutch, and Belgians were prevented from taking full defensive measures and fought only with a part of their actual strength.

In the Polish war, the General Staff had placed its small army in a linear formation extended along an extremely lengthy border, perhaps the longest in Europe. The Germans, on the other hand, concentrated their forces in four groups, two of which attacked from most unexpected directions. Due to the thinness of the Polish defense, the Germans were able to isolate and destroy them without much difficulty.

Another classic example was the German attack through the Ardennes, a deeply cut and wooded plateau which was a considerable obstacle to movement. The Allies believed that the approach was not suited to large-scale operations and tended to overlook its importance. They were expecting the Germans to repeat the Schlieffen Plan which was to concentrate the main effort on their (German) right wing. As a result, the main battle was expected between the Belgian fortifications and the Dyle River. In fact, the Germans did just the opposite in order to gain maximum surprise.

Although the approach was difficult, good planning and thorough preparations could overcome this disadvantage and a strong attack launched. The risk was to be accepted in return for a definite chance of surprise. As such the main attack was put in through the Ardennes with subsidiary feints in other sectors to keep the

Allies concentrated in areas where no decision was sought. This took the Allies by complete surprise and their awkward dispositions prevented any appreciable regrouping to cope with the German breakthrough. Perhaps this German maneuver ranks among the best examples of surprise in history.

Defensive surprise in the Battle of Alam Halfa was achieved by clever deception. A false map was specially printed and planted on the enemy, to show excellent going immediately to the south in order that, in case of an enemy breakthrough in the southern sector, movement should be canalized in an area of sand and extremely bad going, within range of a heavily defended position.

In this event surprise was achieved as intended and Rommel's defeat marked a turning point in the history of the North African Campaign.

For an example of feint combined with deception we turn to Montgomery at the Battle of El Alamein. Here his intention to force a gap through the enemy defensive system in the north was masked by a long-term cover plan designed to indicate to the enemy that the prospective attack was to take place in the southern sector. The artillery, transport, and tank dispositions required for the northern attack were achieved without any visible decrease in density in the south by skillful use of dummies. Simultaneously, active measures designed to indicate a southern attack took place, consisting of dummy pipelines, dummy dumps, and a radio deception program operated by a bogus divisional headquarters.

The deception was maintained throughout the first three days of the battle, during which time the XIII Corps made apparently deliberate attempts to make a breakthrough in the south. This kept Rommel guessing and prevented him from repositioning his 21st Panzer Division. In the words of Field Marshal Montgom-

ery, "Tactical surprise was an important factor; the break-in operation achieved it completely, for the enemy had expected our main thrust in the south."

The use of large-scale airborne troops in Crete was another example to show the effectiveness of least expected ways and methods of war as effective measures of achieving surprise.

The above survey of the last war, although in very brief form, shows how surprise was achieved to obtain decisive and far-reaching results. *Although it may not have spared fighting, yet it certainly did save blood.*

Future War

With the advent of technical development, the importance of surprise and deception has grown both militarily and politically. Attacks such as that made on Pearl Harbor will be easier in the future, since an intercontinental ballistic missile can pass over the Atlantic in a matter of hours. Use of biological and chemical warfare cannot be ruled out. The importance of national security measures is increased.

There can be no doubt that any future war will be fought with full use of atomic and other weapons of mass destruction.

Although little actually can be predicted about the final shape of atomic weapons, whenever future war may break out one basic lesson can certainly be anticipated. Every effort must be made to avoid presenting the enemy with a target worth an atom bomb. Any effort or time expended for this purpose certainly will be amply repaid. This will be accomplished principally by surprise and speed which bear a very close relationship. It will call for improved troop movement on the battlefield and quick decisions.

Surprise is likely to play a major role in the opening stages of future wars. Attacks undoubtedly will be unheralded by any formal declaration of war and will be directed at vital parts with overwhelm-

ing strength. This lesson was learned in 1915 when the Germans employed gas as a new weapon on the battlefield. Its material and moral effects were extraordinary, but the Germans failed to exploit this chance for two reasons:

They failed to use the weapon in the correct quantity (in mass), and they had no specific forces earmarked for the action. The Allies had sufficient time to gain reasonable knowledge of the weapon and arrange efficient protective measures. *A new weapon is a great asset to surprise but can surprise only once.*

Keeping this in view, we see that from the surprise point of view, the attacker's gains lie in the mass employment of nuclear weapons in the opening stages of the war with adequate forces available for exploitation.

Nuclear weapons and techniques certainly give excellent opportunities for effective surprise. For instance, to equal the amount of energy given off by a single 20-kiloton bomb, one would have had to concentrate masses of conventional guns, sacrificing the very thought of surprise. Atom bombs and shells enable us to deliver devastating firepower with immense possibilities of surprise. Future military leaders must take full advantage of such an opportunity.

The converse of this is equally important. We must guard against such surprises. *Concealment, camouflage, dispersion, and protective construction together with greater speed will be our greatest safeguards in the field.*

In the defense, also, extensive use will have to be made of deception to make the enemy waste his atomic weapons and draw him into our own atomic killing areas. An excellent intelligence and reconnaissance system is required to catch the enemy during his brief concentrated moments. Any fault in the intelligence system will result in the loss of good targets and perhaps defeat in battle.

Throughout the attack maximum deception will have to be carried out in order to draw the enemy's atomic weapons away from the attacking troops. This is a much greater problem than would appear at first sight.

The commander planning the attack must realize that any part of his force which is used for a feint attack with the aim of drawing the enemy's atomic weapons on itself will, if successful, suffer terribly and may be completely wiped out.

Conclusion

Surprise is among the most potent factors of war. It is attained by applying the other principles of war in a way that is unexpected to the enemy. Its results are threefold. *Physically*, it catches the enemy off balance; his resources are not disposed in the best way to ward off the unexpected threat. *Mentally*, it forces the enemy commander to make a fresh plan and, having lost the initiative, he must conform to the moves of his opponent. *Morally*, it affects him more than an unfortunate setback.

The conception of surprise is based on a number of factors, a few important ones being good intelligence, adequate information, morale, and being unexpected. A plan may be unexpected as a result of concealment, invention, deception and feint, improbability, or risk. The history

of the Second World War is full of instances of surprise attained on a basis of the above factors. Poland, Norway, France, Pearl Harbor, Alam Halfa, El Alamein, and air supply in Burma are among the most obvious. In all these instances surprise implied some degree of force, or blow, as well as the use of the unexpected to put the enemy at a disadvantage.

The importance of surprise has increased many times with the advancement of technical developments and particularly with the introduction of nuclear weapons on the battlefield. Speed and surprise will be of the utmost importance in the face of an atomic threat: so important that they may spell success or disaster for a nation.

Excellent intelligence and a good early warning system are the only passive means available for national security and may enable a nation to escape complete annihilation from a surprise attack with the mass destructive weapons of the future.

Secrecy, speed, mobility, and surprise will be the prerequisites of a future victory. Luck and art must combine to catch the enemy by surprise. In war the unexpected is the most successful: thus surprise has been, and will continue to be, the key to victory.

NATO and the South Atlantic

Translated and digested by the MILITARY REVIEW from a copyrighted article by Colonel João Mendes da Silva in "Revue Militaire Générale" (France) October 1957.

THE primary objective of NATO at the time it was conceived was to ensure the effective protection of the Western World, utilizing the basic principle that such protection would be provided principally by the operation of ground, naval, and air forces as they existed at that time. The adopted strategy was based on the capa-

bility of opposing the aggressor with an effective land defense and to exert massive and immediate retaliation from the air.

After seven years of operation, with the participation of 14 countries, NATO has had to prove itself in a number of important areas. It resolved them with suf-

ficient success so that a reduction of military efforts could be envisaged by at least some of the interested countries.

However, Supreme Headquarters Allied Powers Europe has endeavored to maintain a firm grip on the military commitments that had been made, even when the USSR suggested a reduction in armament and a renunciation of the Treaty of Warsaw, the latter being the Communist counterpart of NATO. Other suggestions, such as the withdrawal of both Russian and Western military forces about 500 miles back from the Iron Curtain, similarly were met. Even if Soviet troops had been pulled out of satellite countries because of the difficulties in Poland and Hungary, and if it had been possible, therefore, to consider a reduction of NATO forces, there could have been no question of total demobilization.

The NATO Plan

Accordingly, the initial NATO plan was based on the so-called "conventional" form of war. But the sixth decade of this century has seen a shift in emphasis. Strategic air forces, manned or unmanned, capable of bombings at distances of 6,000 miles, even circling the planet while being refueled in flight, are of increasing importance. Also nuclear energy is strongly accented either in the form of ICBM's, or delivered as bombs by planes and ships.

Intercontinental bombers (*B-52* and *Bison*) and the ICBM's (*Triton*, *Atlas*, *T-3*, and *T-4*), as well as the *Nautilus* and other nuclear-powered undersea craft, are writing new doctrinal pages of "total geopolitics," thus following in the footsteps of the presently outdated theories of Haushofer, Mackinder, and Mahan.

Professor Roucek wrote:

Only after the Second World War has airpower been recognized officially as an expression of national power. While the ground and the sea limit and channel communications, airspace alone affords relative freedom of movement. The develop-

ment of airpower has overthrown the traditional concept of national power. The strategic mission—preparation and execution of operations to determine and directly influence the result of war—today is directly and immediately influenced by airpower.

The Strategic Air Command and the Air Defense Command have replaced the Navy in the frontline position for the defense of, or an attack by, America.

It should be remembered that in 1952 when this was written, SAC was equipped with the *B-36* and *B-47*; today it has the *B-52* and *B-58* supersonic intercontinental bombers.

The Arctic

Airpower has revolutionized geopolitics by reuniting the earth and the atmosphere in time and space. Airpower has accorded particular importance to a geographical area that man could not dominate previously—the Arctic. For 2,000 years this area had resisted the attempts of men in ships as well as those that made their way on land. Thousands of lives have been sacrificed to the cold, hunger, privations, and disease in the longest, most difficult battle that man ever fought against nature. The steam engine that succeeded the sail was replaced by the liquid combustion motor; steel took the place of wood, but the Arctic always has resisted earthbound efforts.

Now with planes things are different.

On 24 February 1957 two *DC-7's* of the Scandinavian Air System, leaving respectively from Tokyo and Copenhagen, opened the new transpolar route.

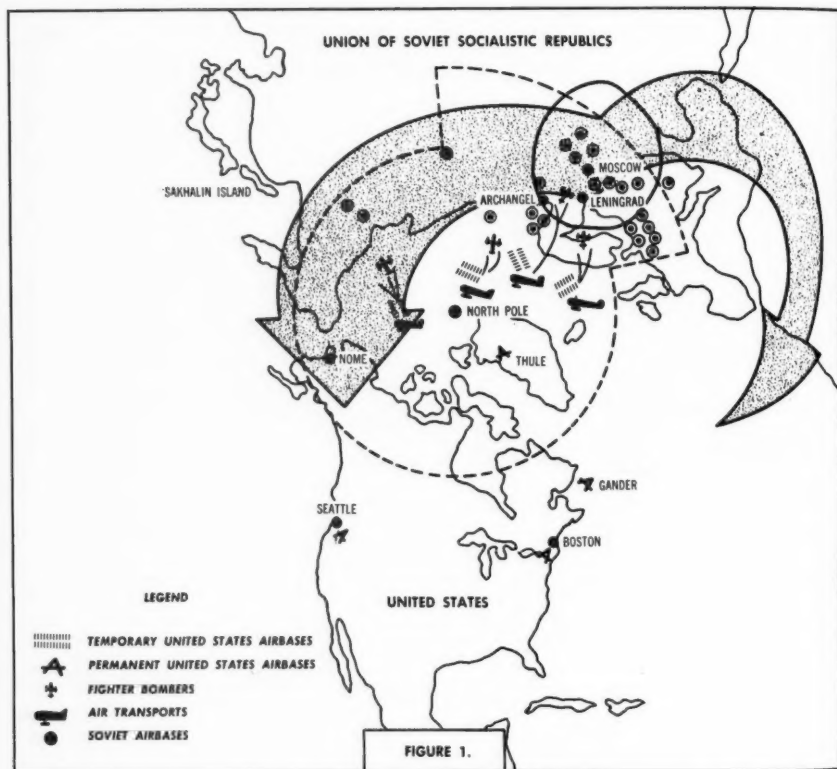
So far as the capabilities of military planes are concerned, one need only consult a map (Figure 1), to see that the Arctic route is the most direct line of attack leading to the heart of one or the other continent.

This, therefore, is the route that strategists will choose in preparing their plan. Without doubt the United States and Rus-

sia attach special interest to this region, upon which their very survival may depend. Both have found it necessary to draw up elaborate plans for the possible use of force. A strategic area of such im-

world. The most typical case in point is that of East Germany.

Thus the Soviet leaders cannot adopt a strategic concept that would lead to a nuclear exchange with its threat to the



portance must not be neglected by those in a position to use it in their own interest.

Soviet Strategy

The Russian strategy is somewhat different from those countries which need no "specific strategy" involving politics in combination with the use of weapons. The kind of strategy without which there can be no real victory for Moscow is linked to Communist expansion throughout the

survival of the regime following a retaliatory atomic attack. The mere destruction of any country is, in itself, not a final objective as far as the Soviets are concerned, but merely a step in their pursuit to conquer the world.

From the Soviet point of view no form of war must be allowed to bring about an extensive weakening of the Russian military potential, not only in relation to the adversary of the moment, but also with

respect to any other country having military strength. These countries could one day actually find themselves in a position to checkmate the Communist regime as a consequence of the weakening of the military forces that support it.

Therefore, it does not seem that the men in Moscow can envisage a deliberate

possible to envisage an operation to the south that would lead across the Near East and Africa. This, in turn, focuses attention on the defensive organization of South America, of which Brazil is an essential part.

In the particular case of Brazil, the "geopolitical area" situation must be con-

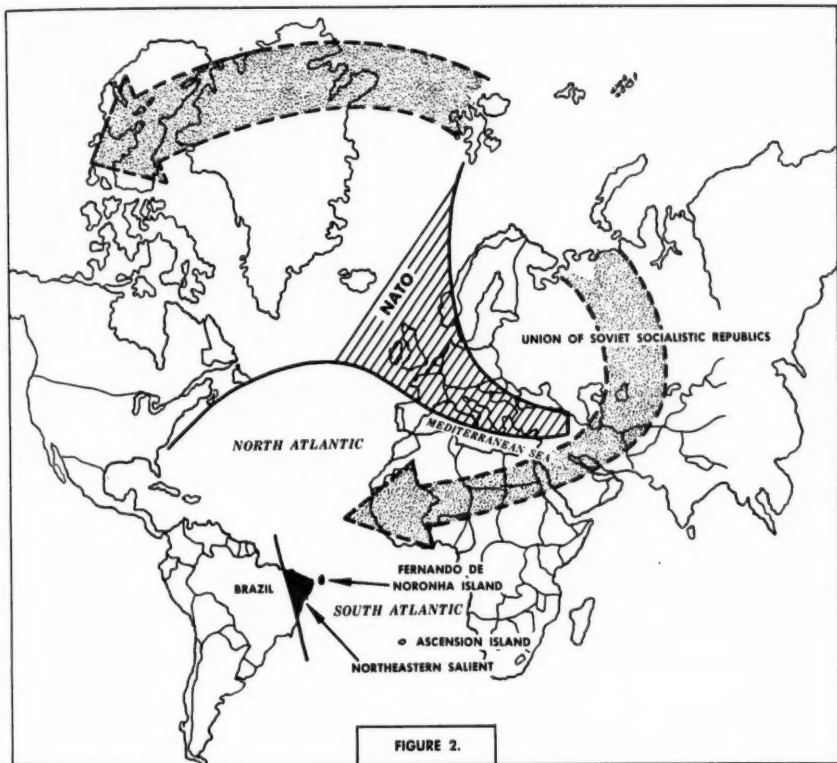


FIGURE 2.

form of war that would compromise the success of the world revolution.

The Role of Brazil

The appearance of new weapons has enlarged geographic space greatly considering the forces involved. If the Arctic affords the possibility of an operation that extends beyond the north, it also becomes

sidered carefully and viewed from the angle of national interest as well as from the objectives of worldwide consequence. This involves the northeastern projection of Brazil and the southern Atlantic.

The "northeastern salient," projecting from São Luiz to Salvador into the southern Atlantic, constitutes an advanced out-

post of South America in this critical area of the ocean (Figure 2). It is also a territory whose relatively dense population is accustomed to privations, having not yet reached the living standard that progress and industrialization bring about. The men of this area are trained to sacrifice by the hard fight against the rigors of nature. They demonstrated in the Italian Campaign of World War II that they are staunch patriots and brave soldiers.

The northeastern region is a factor of the utmost importance in the over-all picture of Brazil. It is the tie which will assure the unity of the country between the industrialized and dynamic south and the Amazon Jungle.

This region now receives its electrical energy from the State of Minas Gerais via Paulo Afonso and controls the natural riches of the States of Rio Grande do Norte, Ceara, Piaui, and Maranhão. As long as the northeastern salient is not consolidated sufficiently from the economic and humanitarian viewpoints, the "three great Brazilian islands" consisting of the fertile and rich industrial south, the jungle with its immense riches, and the northeast—the connecting link—will remain more or less isolated from each other.

On the international scale, the defense of the South Atlantic logically complements the over-all defenses of the North Atlantic and the Mediterranean Sea, and is the responsibility of NATO.

The South Atlantic is destined to be the natural passageway of the allied commercial lines of communications. This route permits an uninterrupted flow of indispensable and vital products such as fuel, minerals, textiles, and foodstuffs in support of the logistical effort of the West. This, of course, only constitutes a repetition on a much larger scale of similar events of World War II.

If the above is recognized as an established fact, inter-American solidarity must be viewed as an absolute necessity. For the American countries desiring peace and

treasuring their freedom, it is of vital importance that air and sea traffic between the northern and the southern continents be uninterrupted. To assure this, it is necessary that appropriate means of defense for the naval and airbases all along the immense Atlantic coast be made available. This defense will be the duty of all, and a combined action must be brought to bear without delay on all threatened points.

Therefore, it is necessary to establish a new line of defense equipped with means of detection and intervention that are capable of acting efficiently and promptly against all aerial threats. It is this necessity that indicates the value of the northeastern projection of Brazil, the easternmost part of the South American Continent.

The facts today still justify the opinion of Walter Lippman who, in 1943, advocated the creation of an Atlantic community in the following words: "In the South Atlantic it is indispensable to maintain strong naval and airbases in the eastern projection of Brazil."

The South Atlantic defense is of great interest to Brazil, and not from the nationalistic viewpoint alone. This coordinated defense permits Brazil to continue her effective cooperation, as in the past two great wars, in the preservation of democratic standards and ideals.

Time works in favor of the free world. As the solidarity and the unison of the Western European Powers assert themselves, the might of all the Americas increases daily. In this community Brazil plays a vital part because of her strategic situation, natural riches, and "demographic" strength. Her political border joins that of the United States in the Caribbean Sea for the defense of the Panama Canal. Her vigilance as a strategic factor of primary importance will permit the vital flow of supplies and arms for the defensive Western coalition as it faces a totalitarian world.

BOOKS OF INTEREST TO THE MILITARY READER

THE AIR. Conquest of Space and Time. By Edgar B. Schieldrop. 256 Pages. The Philosophical Library, Inc., New York. \$12.00.

By MAJ KEITH C. NUSBAUM, *Arty*

This profusely illustrated and intriguingly written book is one of four by the same author on the conquest of space and time. The others cover the railway, the highway, and the sea. Each stands alone as a separate work.

The book begins with a comprehensive review of the history of man's attempts at mastery of the air, up to the time of the earliest flights by the Wright brothers and Blériot. The author then pauses in his narrative to explain why aircraft fly, and how men learned to control the flight of their aircraft. An explanation of how men have used the airplane in peace and war in the past half century follows.

After a résumé of the theory of flight as it applies to rotary-wing aircraft, the flight of supersonic vehicles is explained. With modern supersonic aircraft and guided missiles as a background the author next looks at the future of flight. Aircraft powered by atomic energy, and flight by men into outer space, both fairly immediate prospects in 1958, are compared with the timorous beginnings of controlled powered flight, barely 55 short years ago on a beach in North Carolina.

The width and depth of the author's scope and vision sets this book aside as a model of philosophical scientific explanation for our time.

PEARL HARBOR TO GUADALCANAL. History of U. S. Marine Corps Operations in World War II. Volume I. By Lieutenant Colonel Frank O. Hough, Major Verle E. Ludwig, and Henry I. Shaw, Jr. 439 Pages. Historical Branch, G3 Division, Headquarters, U. S. Marine Corps. Superintendent of Documents, Government Printing Office, Washington, D. C. \$5.00.

This first volume of a projected five-volume series is the result of more than a decade of preliminary studies and extensive research. Although written and presented as an official history, it is far more than a mere tabulation of dates, places, and names. Its style is that of a smoothly flowing narrative, demonstrating the way in which the Marines brought into action the priceless ingredient of amphibious doctrines and techniques that the corps had developed during the prewar period.

The Wake and Midway stories are related in meticulous detail. The chapter concerning the Marine assault on Guadalcanal presents this saga of determination and raw courage with rare color and interest. The 48 pages devoted to the Marines in the Philippines, and especially the portion concerning the siege and fall of Corregidor in 1942, reads like a novel. Here is a fantastic tale that anyone—marine, soldier, or civilian—will find of absorbing interest.

This volume, with the four that are to follow, promises accurate and readable history, well-illustrated and carefully documented.

THE AMERICAN HERITAGE BOOK OF THE REVOLUTION. By the Editors of *American Heritage*. 384 Pages. American Heritage Publishing Co., Inc., New York. Distributed by Simon & Schuster, New York. Regular edition \$12.50, deluxe edition \$14.50.

By COL RODGER R. BANKSON, *Inf*

This is the literary effort one would expect from the editors of what in all probability is today's outstanding magazine of history.

In size, the book would fit in with an encyclopedia set. In layout, typography, and particularly in lithography it is superb. In content, from the introduction by Bruce Catton through the 14 chapters to the climax at Yorktown and the anticlimactic coming of official peace much later, the volume is unique.

We had our American Revolution nearly two centuries ago, and the years have done something to it. The legends remain, and the statues and the grassy earthworks and the great body of tradition, but a good deal of the reality has been filtered out. When we look back we see Washington crossing the Delaware on a cold winter night, or kneeling in prayer in the snow of Valley Forge; we see the Minuteman, or the lanky Virginia rifleman picturesque in fringed buckskin; but somehow it all seems to be out of a pageant, and neither Washington nor the men who followed him quite come alive for us.

The book is a balanced, across-the-board effort to picture the approach to hostilities, the belligerents, the armies, the soldiers, the statesmen, the national desires, the political aims, and the battles—both military and diplomatic. The book sets out to make the Revolutionary War period live and to lay bare the reality beneath the legend through a flowing narrative and the lavish use of pictures drawn and painted by men who lived through those times. The editors believe that if the vol-

ume breathes a little life into the legend of the men who provided us with our freedom, it will have served its purpose. It does.

The volume is a collector's item. The copy reviewed is available for reference in the USA CGSC Library.

LAST TRAIN FROM ATLANTA. By A. A. Hoehling. 558 Pages. Thomas Yoseloff, New York. \$6.95.

By LT COL RICHARD C. BIGGS, *TC*

Those who have no interest in railroading in the Civil War should not be deterred by the symbolic title of Mr. Hoehling's latest book. Since that was the first major war in which railroads played a principal part, the title is most appropriate, and the book does describe the importance of railroads in that war. However, the main theme of the story is Atlanta, the "Gate City" of the South—the only American city ever to undergo the effects of total war.

Atlanta was the principal industrial center and one of the main communication centers of the Confederacy. The later fall of Richmond was a direct result of the cutting of supply lines from Atlanta. Therefore, the intimate details of the loss of Atlanta are extremely important to a thorough appreciation of the closing campaigns of the Civil War.

Mr. Hoehling has provided an objective and fascinating account of Atlanta's last days. He has done a masterful job of putting together newspaper accounts, letters, diaries, official correspondence, and statements in a clear sequence.

Since the last train from Atlanta was one of the most important of the Civil War, the immediate events leading to its dispatch are of great interest to students of the Civil War. For others, the total war aspects provide contemporary food for thought, and lessons to be learned for the nuclear age.

THE FIGHTING FIRST DIVISION. A True Story of World War II. By John Hurkala. 201 Pages. Greenwich Book Publishers, New York. \$2.50.

By MAJ HOWARD H. BRAUNSTEIN, *Armor*

This book gives the story of the 1st Infantry Division during World War II as seen through the eyes of one of its combat soldiers. Despite the title used, the book does not relate a history of the division during the war years.

The major value of the book lies in its relation of the personal incidents and experiences of the author as the division fought its way through North Africa and Europe. Its rather narrow scope considerably reduces its value to the serious military student.

THE VICHY REGIME, 1940-44. By Robert Aron in collaboration with Georgette Elgey. Translated from the French by Humphrey Hare. 536 Pages. The Macmillan Co., New York. \$7.50.

By MAJ QUINTUS C. ATKINSON, *Armor*

In an objective account of a critical period of French history, Robert Aron, French historian and political writer, presents an interesting and well-documented history of the Vichy regime. A member of De Gaulle's wartime North African administration, Aron exposes many of the actions of the Vichy government heretofore distorted by wartime feelings and postwar politics.

Marshal Pétain is portrayed with all his limitations as a sincere leader who firmly believed his duty was to preserve a French government in France for the protection of its people.

In this French examination of French affairs, the reader will find interesting background on the destruction of the French Fleet at Mers-el-Kebir.

The problem faced by military and civil leaders in deciding where their loyalty lay

also is interesting. Although many Frenchmen suffered the consequences of their decision, perhaps history will agree with the sentiments of General Catroux, commander of the Free French Forces in Syria. After the fighting against the Vichy French and in writing of the burial of the dead of both sides, he said: "... their graves lie next door to those who were their adversaries. They are all alike and carry the same epitaph: 'Died for France.'"

Offered neither as a defense of Vichy nor as an apology for Pétain, Aron presents one of the first unbiased French accounts of this period to be published in English.

BRASSEY'S ANNUAL. The Armed Forces Year-Book 1958. Edited by Rear Admiral H. G. Thursfield. 390 Pages. The Macmillan Co., New York. \$9.50.

This issue of the year-book of the British armed forces is largely concerned with strategic problems arising out of the development of thermonuclear weapons and their possession by both the Western Powers and the Soviet Union. Although written primarily from the viewpoint of the British armed forces, it contains much of direct interest to American readers.

Presented in the form of a series of articles, this volume covers many aspects of international strategy in the nuclear age and the weapons to implement it, including chapters on progress in the development of aircraft during the past year, and a description of the world's navies. Of especial interest are a discussion of Limited War by Dr. Bernard Brodie, and a thoughtful analysis of Naval Strategy Today by Professor Anthony E. Sokol.

Brassey's Annual has been published for 69 years, and the 1958 edition continues the wide coverage, authentic sources, and topflight writing of previous volumes in this series.

THE JAPANESE THRUST INTO SIBERIA, 1918. By James William Morley. 395 Pages. Columbia University Press, New York. \$6.00.

BY LT COL GEORGE B. MACAULAY, *Arty*

Here is a specialized treatise analyzing the reasons for Japanese intervention in Siberia in 1918. It will be of great value as a reference book and to individuals interested in this field and era.

FORGING A NEW SWORD. A Study of the Department of Defense. By William R. Kintner in association with Joseph I. Coffey and Raymond J. Albright. 238 Pages. Harper & Bros., New York. \$4.50.

BY MAJ WILLIAM W. CHANDLER, *SigC*

The author and first-named associate of this book are colonels in the United States Army. If this leads you to expect a book extolling the virtues of the Army over those of the other services, or proposing reorganizations which favor the Army, you will be disappointed. Nor does the book escape that fate solely because of the contributions of Mr. Albright, a civilian official in the Department of Defense. Colonels Kintner and Coffey also have served on high-level staffs, and the book reflects a nonpartisan approach to the problems of national defense.

Military and civilian readers alike will profit from the discussion of the intricacies of the Department of Defense organization. "National security today is everybody's business," says Colonel Kintner in his preface, and then proceeds with a logical and detailed examination of the organization charged with maintenance of this security.

After a history and description of the organization of the Department of Defense, the reader finds a number of conclusions and recommendations for improvement. This approach to the problem of reorganization is not, however, purely theoretical. Colonel Kintner and his as-

sociates recognize that there are many exterior pressures affecting any interior reorganization, and take full cognizance of the major pressures involved.

One may not agree completely with the conclusions reached, but the discussions of the problems and the possible solutions make the reading well worth while.

RIBBON CREEK. The Marine Corps on Trial. By Brigadier General William B. McKean, USMC, Retired. 534 Pages. The Dial Press, Inc., New York. \$5.00.

BY COL MALCOLM O. DONOHOO, *USMC*

When six of a drill instructor's Marine recruits drowned in Ribbon Creek on Parris Island, it touched off a national controversy. Here, in a book that spares neither the corps nor the personalities involved, the sergeant's commanding officer at the time has written a complete account of the men, the case, the trial, and of the military system itself.

So states the dust jacket of this long and detailed rehash of the training tragedy which shook Parris Island and the Marine Corps in April 1956. The early chapters of the book provide an interesting account of the locale and a complete picture of the background and events related to the actual incident.

Brigadier General McKean finds little good in any of the actions or attitudes of any of the Marine Corps officers involved—from Sergeant McKean's company commander to the commandant of the Marine Corps—but he does have praise for the job done by Emile Zola Berman, Sergeant McKean's defense counsel during the trial.

This apparent bias makes his conclusions something less than convincing and, therefore, does not accomplish the author's stated hope that the book will give the reader "deep insight into human nature and the dynamics of Marine Corps leadership."

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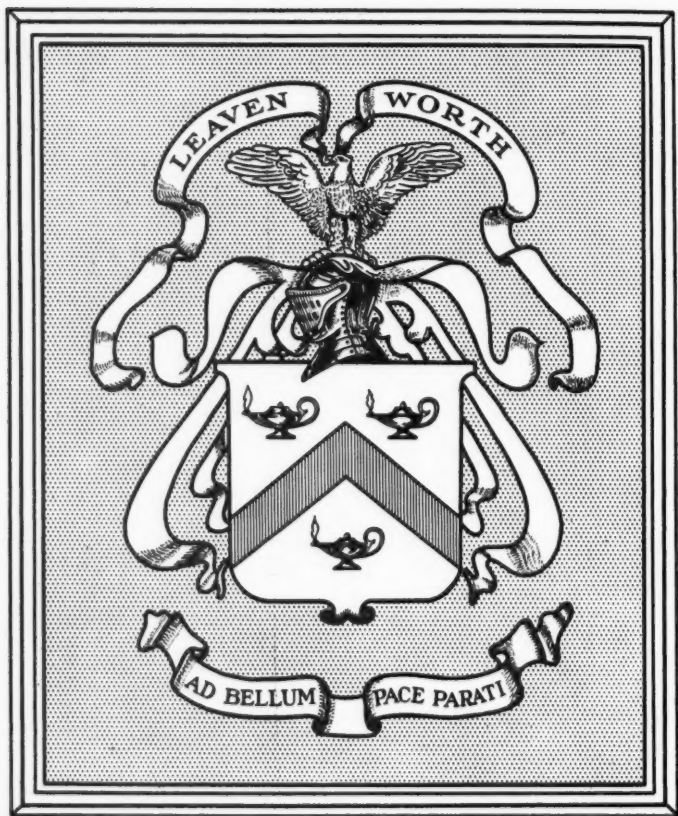
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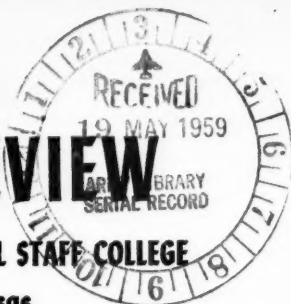
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